FEDERAL®

1994 AMMUNITION

FEDERAL®
Ammunition

Federal Cartridge Company, Anoka, MN 55303 (612) 323-2300

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MW93115

Dear Federal

This catalog is about Federal® ammunition. It has our latest technical data. It features our newest loads.

It's also about the people who use Federal ammunition. It's about their experiences and it's about the genuinely unique relationship that exists between this company and its customers.

The letters we've reproduced in this catalog arrived here in Anoka unsolicited. Federal customers sat down, wrote and sent them on their own.

We find that to be very gratifying.

In a world dominated by account numbers and "To whom it may concern" correspondence, our customers see us as people who share their love for hunting and shooting; as people who are interested not just in selling more product, but in making sure the product performs as promised.

Good. Because that's the kind of people we are. We're lucky enough to earn our living doing something we love. And when our customers see and appreciate the thought and care we've put into our products, we try that much harder.

We have a number of excellent competitors. Like us, they make good products and work hard to satisfy their customers. But, here at Federal, we have something more; something they'll never replicate.

We have a growing base of extremely loyal customers. Those customers see, experience and appreciate how much we put into every round. They know there's a distinct difference between Federal and those others.

Some of them are old friends. They've been Federal customers for decades. Others are recent converts. They've found a particular Federal load that works especially well for them. We appreciate each and every one.

Old friend or recent convert, if you're a Federal customer, we assure you we'll never take your business for granted. We'll always be interested in hearing from you.

And, if you're not one of our customers yet, maybe something one of these Federal customers has to say will convince you to try one of our products this year.

Either way, drop us a line. We'll be waiting to hear from you.

THE GREAT ALASKAN TEST LAB.

AUGUST 28, 1992
DEAR FEDERAL CARTRIDGE CO & EMPLOYEES,
IT'S VERY RARE INDEED THESE DAYS TO FIND A PRODUCT THAT'S RELIABLE, DOES WHAT IT CLAIMS AND THEN OUT DOES WHAT IT WAS DESIGNED FOR AS WELL. I WANTED TO SHARE WITH YOU MY THOUGHTS AND EXPERIENCE WITH A CARTRIDGE MADE BY YOU FOLKS THAT I'VE REALLY COME TO ADMIRE AND TRUST.
I'M AN ALASKAN HUNTER AND SPEND MANY DAYS A FIELD IN EVER CHANGING WEATHER & TEMPERATURE CONDITIONS THAT TEST HEAVILY ALL OF MY OUTDOOR GEAR. IT DIDN'T TAKE LONG TO DISCOVER WHAT WORKS AS CLAIMED AND WHAT DOESN'T.
I THOUGHT YOU'S WOULD KNOW THAT YOUR PREMIUM SAFARI CARTRIDGES HAVE GONE THRU MORE MORE ACTUAL ABUSE AND EXPOSURE TO ELEMENTS THAN LAB COULD DESTROY UPON THEM AND COME THRU WITH FLAWLESS PERFORMANCE
LET ME EXPLAIN.... 3 YEARS AGO I BOUGHT SOME 338 PREMIUM SAFARIS FOR A 700 MILE TRIP BY SMALL BOAT FOR MOOSE ON THE KOYUKUK RIVER. 3 WEEKS OF RAIN & EXPOSURE + ROUGH HANDLING FOR THIS CARTRIDGES. THEN WHO A LARGE BULL MOOSE (VERY MUD) COME OUT OF THE WILLOWS AT CLOSE AND DANGEROUS RANGE - YOUR 250 GR. CARTRIDGE STOPPED HIM IN HIS TRACKS. NO I DIDN'T FIND THE BULLET ? IT BROKE SOLID BONE GOING (LOOKING FOR ANOTHER MOOSE I GUESS)
2 YEARS AGO, ALASKA RANGE NEAR MT MCKINLEY, SOME CARIBOUS PURCHASED 3 DAYS AGO. TEMPERATURE - 10 TO 15 BELOW ZERO, TOOK 1 LARGE BULL CARIBOU. 60 INCH HOLD OVER FOR BULLET DROP (ESTIMATED RANGE 500 YDS) BULLET STRUCK NECK IN FRONT OF SHOULDER & FOUND BULLET UNDER HIDE ON OPPOSITE SIDE OF ENTRY HOLE. PERFECT MUSHROOM SHAPE ON FRONT 1/4 OF BULLET. NO WEIGHT LOST---

When we read this letter from Rob Halgren in Anchorage, we couldn't resist. We called him up and asked him to "star" in a Federal magazine ad.

He said yes, so we flew up, took a few pictures and tasted some of that caribou Rob was talking about. Needless to say, it was wonderful.

Centerfire rifle, handgun or shotgun shell, Premium® is our top-of-the-line brand. We design, manufacture and load every round to perform "as advertised" under the most demanding conditions.

Brass. Nickel. Copper. Lead. Only the best, only the most reliable materials will do as we manufacture each component to the most exacting tolerances.

Then there are the bullets: Nosler Partitions*, Sierra Boat-tails, Woodleighs and, this year, a new, Federal exclusive, Trophy Bonded bullet (turn the page for all the details).

Combined with the best powders and primers (and the talents of our people) they'll match the best work of some of America's most finicky reloaders.

For consistency and accuracy under all kinds of conditions, these are the best manufactured loads in the world.

Don't trust a moose in a willow thicket to anything less.

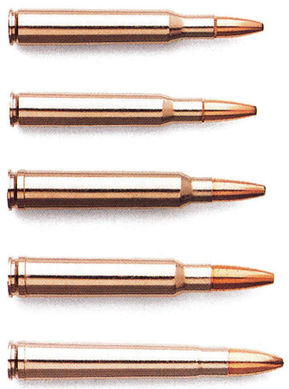
Trophy Bonded bullets are manufactured by Federal Cartridge Company under license agreement.
** "Nosler" and "Partition" are registered trademarks of Nosler Bullets, Inc.*

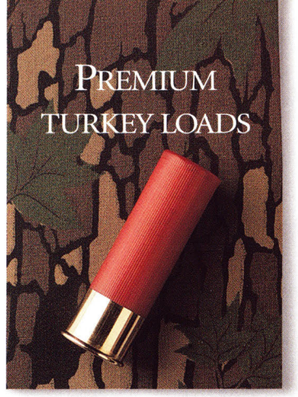
THE TROPHY BONDED BULLET

Our new Trophy Bonded bullet is, beyond a doubt, the most effective bullet design yet for big and dangerous game. It was developed by big game hunter Jack Carter and, prior to this, was only available to people who hand loaded.

The core and the jacket are 100% fusion-bonded, causing the Trophy Bonded bullet to mushroom perfectly, retain significantly more weight on impact (90–95% of its weight, to be exact) and penetrate deeply.

Not coincidentally, the Trophy Bonded bullet is extremely accurate as well—more accurate than any other manufacturer's high performance round.





Tight, consistent patterning at longer ranges. That's what you get with Federal Premium Turkey Loads. We start with extra-hard, high antimony lead shot, copper-plate it and add a unique plastic buffer. Then we load it in Federal's exclusive Triple-Plus® wad column.

As a result, our shot stays rounder, patterns better and hits harder, making Federal Premium Turkey Loads the round of choice for smart turkey hunters everywhere—bagging the 1993 National Wild Turkey Federation's Manufacturer of the Year award for Federal.

PREMIUM HYDRA-SHOK HANDGUN AMMUNITION

These rounds rewrote the book on high performance handgun ammunition.

Federal Premium Hydra-Shok® ammunition, with its unique center post design, provides consistent, reliable expansion and penetration.

They were the first rounds to meet the stringent test criteria outlined by the Federal Bureau of Investigation in 1988. They remain the standard by which all others are judged.

And, unlike some other "come-lately" ammunition, this ammunition has proven itself on the streets as well as in the laboratory. Time and again, Federal Hydra-Shok ammunition has performed flawlessly for law enforcement officers all over the nation.

PREMIUM BUCKSHOT

Tighter, more consistent patterns at longer ranges are a specialty with our Premium Buckshot. Our harder, copper-plated shot is spiral stacked, packed with a granulated plastic buffer and protected by our unique shot cup to stay rounder and fly truer. They are sealed at the crimp for weather protection.

For power, accuracy, precision and optimum result upon impact, our Premium Buckshot is state of the art.

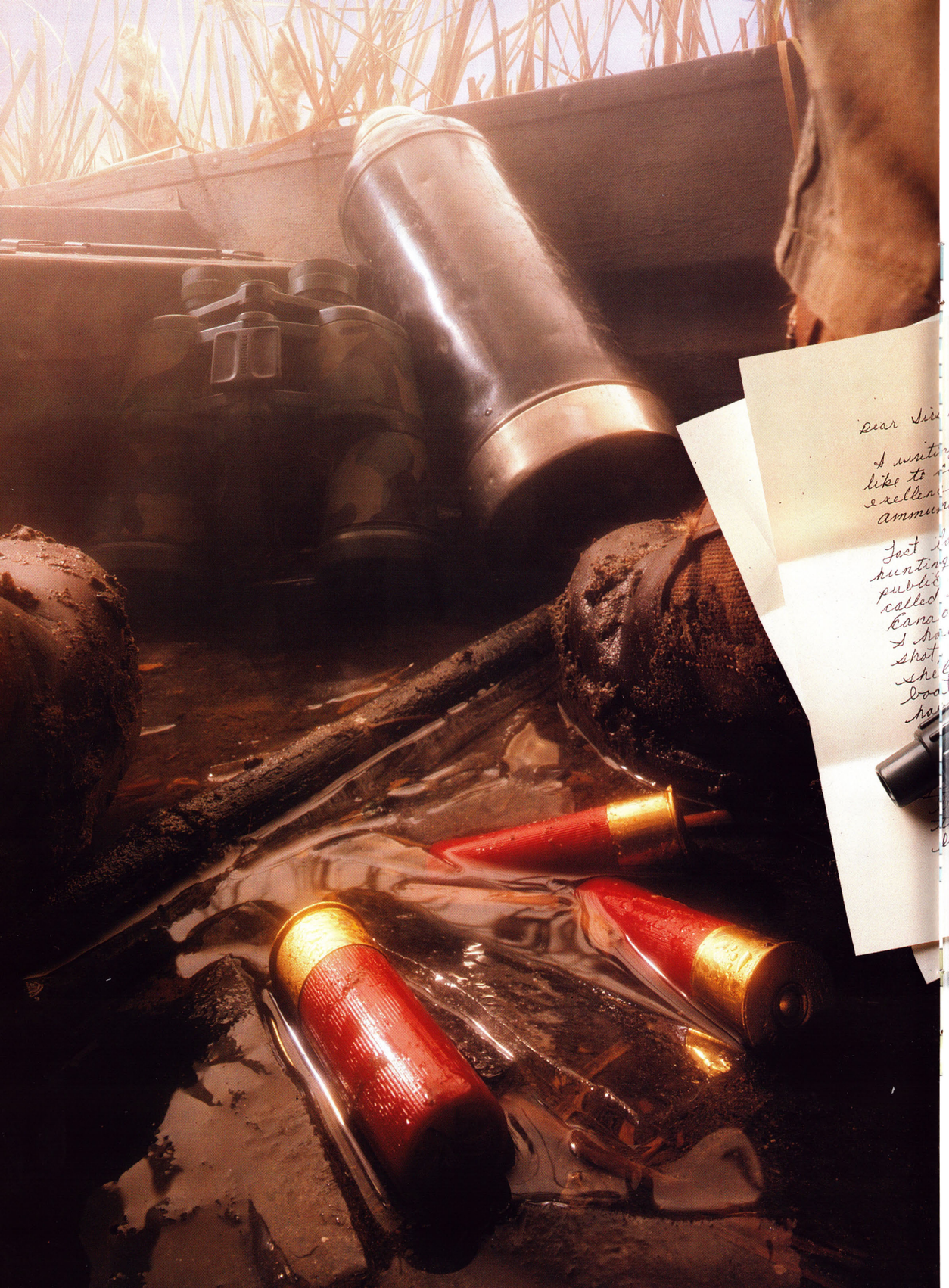
PREMIUM SABOT SLUGS

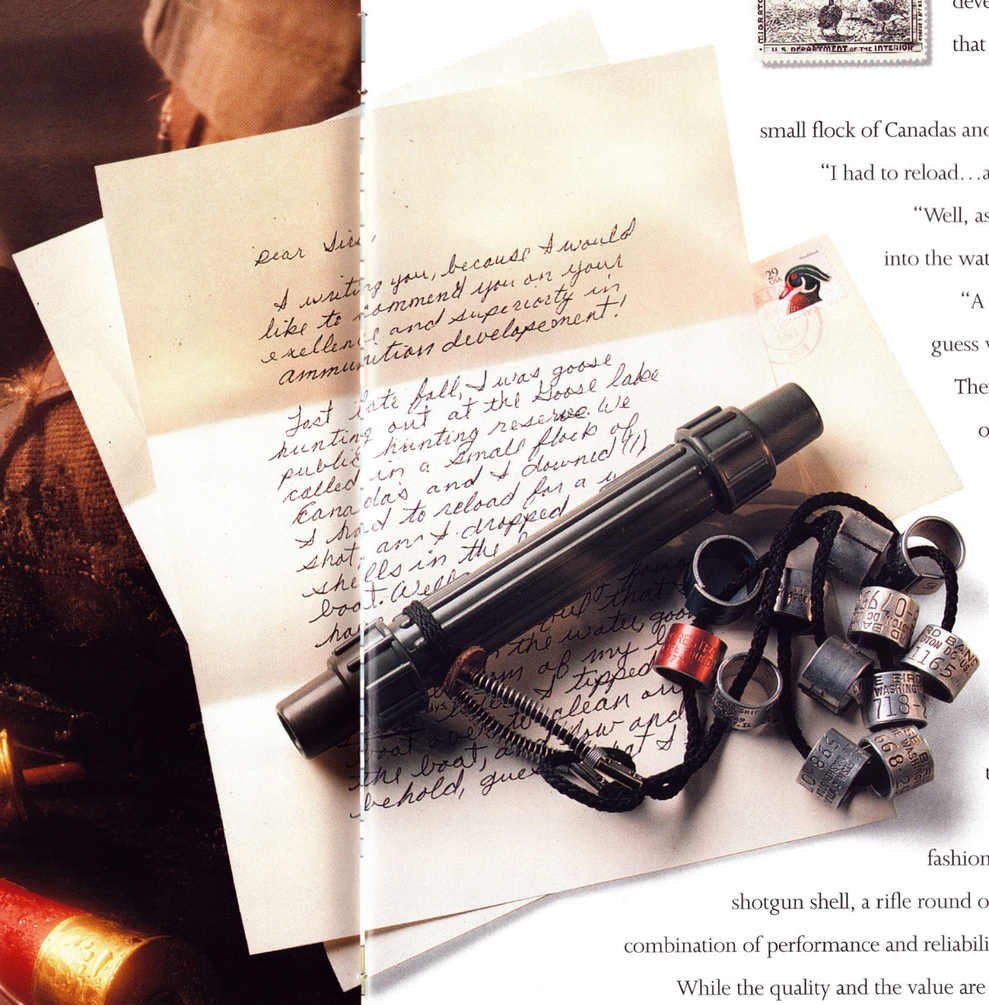
With more and more states requiring deer hunters to use slugs, we're proud to offer this extremely accurate, extremely powerful technology with our unique, patented, copper-plated Hydra-Shok slug design.

A plastic sleeve (called a sabot) stabilizes the slug as it is propelled down the barrel, providing incredible accuracy for rifled barrels or rifled choke tubes.

These slugs give you high impact, reliable expansion and deep penetration. Most important of all, they are extremely accurate (2½-inch groups at 100 yards). They give you the confidence traditional shotgun slugs have never been able to.

"I DROPPED SOME SHELLS IN THE BOTTOM OF THE BOAT..."




dear Sirs,
I writing you, because I would like to commend you on your excellent and superiority in ammunition development!
Last late fall, I was goose hunting out at the Goose Lake public hunting reserve. We called in a small flock of Canadas and I downed one. I had to reload for a second shot, and I dropped some shells in the bottom of the boat. Well, guess what I found:

While other manufacturers are touting water resistance as a recent development, this letter from Tim Jenkin down in Clinton, Iowa, is proof that making a shotgun shell water tight is "old hat" here at Federal.

"Late last fall, I was goose hunting out at Goose Lake...We called in a small flock of Canadas and I downed one.

"I had to reload...and I dropped some shells in the bottom of the boat.

"Well, as you would have guessed, I only found two of the handful I dropped into the water-and-gook-filled bottom of my boat.

"A week later, I tipped the boat over to clean it out and, lo-and-behold, guess what I found: Three muddy, wet, 12 gauge, 3-inch BBB magnum loads. They'd been submerged in 3 inches of muddy, cold, icy, frozen-a-couple-of-times water.

"I wiped them off with my glove and stuck them in my gun. I killed three geese that day—one with each load."

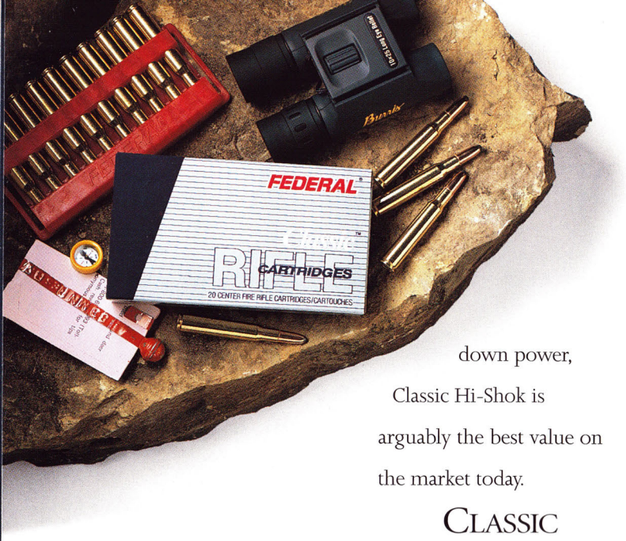
Now, maybe you've never spent a cold November morning up to your boot ankles in that gunk at the bottom of an Iowa john boat. Take our word for it. The conditions will test you. They'll test a shotgun shell too.

When that shell is Federal Steel, you can be sure it will pass the test (turn to pages 10 and 11 for all the reasons why).

The reason is simple. We base the entire Federal Classic® line on old-fashioned, meat-and-potatoes, bread-and-butter quality. Whether it's a shotgun shell, a rifle round or handgun ammunition, Federal Classic gives you the industry's best combination of performance and reliability at a very competitive price.

While the quality and the value are old-fashioned, the technology is state of the art. The next couple of pages should convince you of that.

If they don't, just ask Tim Jenkin down in Clinton. His case for shooting Federal Steel is—well—water tight.



Classic Hi-Shok Rifle

The unsung heroes of the Federal Classic line, our Hi-Shok® rifle ammunition have quietly and steadily delivered superb results for years.

Hi-Shok is available in a wide variety of bullet styles and weights. From the high velocities and flat trajectories of our varmint loads to the powerful punch of our bigger hunting rounds, there's almost certainly a Hi-Shok round that's just right for you and the way you hunt.

For reliability, accuracy, expansion and superb knockdown power, Classic Hi-Shok is arguably the best value on the market today.

Classic Handgun Ammunition

Federal's Classic handgun line is one of the most complete lines of handgun ammunition on the market today

We offer virtually every bullet profile and weight in one of the industry's widest assortments of calibers.

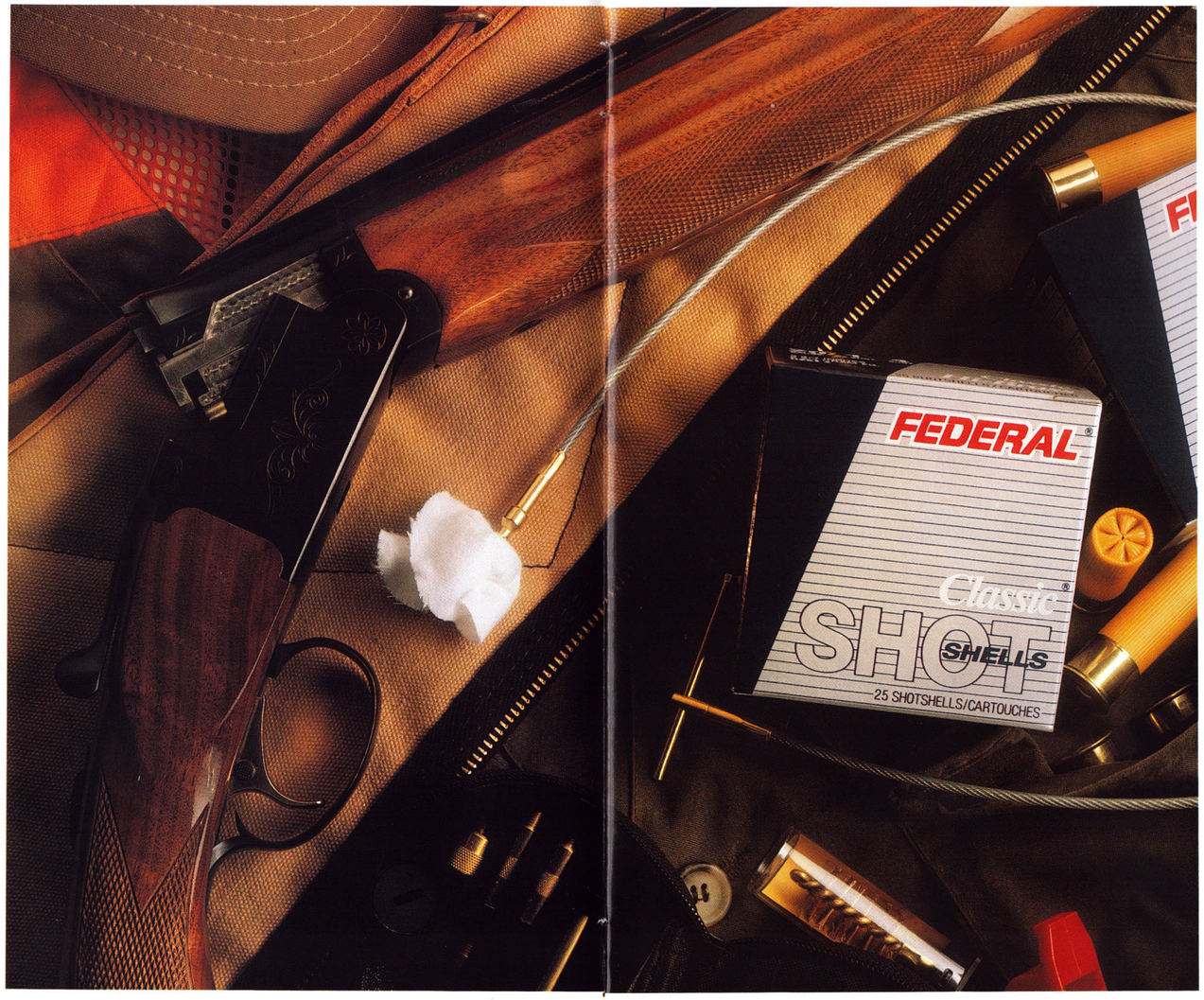
Here again is Federal quality at work. The components are expertly matched to assure you optimum reliability and performance.

Our consistency and accuracy make this one of the most respected lines of ammunition in the world. For plinking, paper targets, home protection or hunting, the right round for your favorite gun is right here.

Classic Rifled Slugs

We designed our Classic Hi-Shok rifled slugs to be extremely powerful, extremely accurate and extremely reliable. Our special helix ribbing enhances stability while our hollow point maximizes expansion and knockdown power.

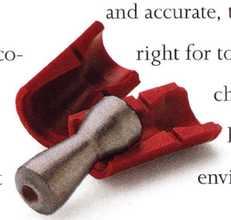
The patented Sabot precisely aligns the slug for its trip down the bore. The hollow point design optimizes expansion and greater distances.



Lead Round Nose · Full Metal Jacket · Jacketed Hollow Point · Jacketed Soft Point · Lead Semi-Wadcutter · Full Metal Jacket Semi-Wadcutter · Lead Wadcutter · Semi-Wadcutter Hollow Point

Classic Sabot Slugs

Hardworking and economically priced, the Classic Sabot slug gives you consistent accuracy at knockdown power. Powerful and accurate, this load is right for today's changing hunting environment.



Steel Shot Sizes: 6 · 4 · 3 · 2 · 1 · BB · BBB · T · F

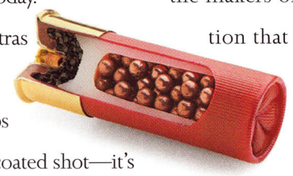
Federal Steel

Water resistance is nothing new for our Federal Steel shotgun shells. We've been sealing them up tight for years.

In fact, these days we triple-seal them—at the primer, at the wad and again at the crimp. Other manufacturers may tout this as an innovation. Here at Federal, it's just standard procedure.

We helped pioneer steel shot years ago. We still lead the industry today.

Little extras like our extra thick shot cups (and copper-coated shot—it's standard) add up to a big difference out there in the blind. They help create denser patterns and make our steel shoot and feel just a little more like the lead shot you may have grown up shooting. Meanwhile, our high output primers help assure reliable ignition, no matter the temperature and weather extremes.



Classic .22

A versatile line for a versatile caliber. Classic® .22 gives you a wide range of bullet profiles and weights (including our big, accurate 50 grain .22 Magnum). All of them are designed to be incredibly accurate. Would you expect anything less from the makers of the ammunition that helped win an Olympic gold medal?

Whatever your reason for shooting a .22, there's a Federal round that's just right for the job.

"It appears that your research and development staff has done it again."

When Launi Meili won the Olympic gold medal with our Ultra-Match™ .22 ammunition, she put the world on notice that a new player had arrived on the high-tech shooting ammunition scene.

That player is Federal and, today, we're making significant advances in shotgun shells as well as match shooting rifle rounds.

As this letter from Lloyd F. Woodhouse, National Shotgun Coach for the U.S. Shooting Team attests, we're working hard to improve every aspect of each round we make for the competitive shooting sports.

"It appears that your Research and Development staff has done it again. We just completed the season with your new N119 7½ and 8½ international shotgun shells, and the results were spectacular.

"Our shooters fired your new shells in every conceivable weather condition at world cups in Cairo, Egypt; Seoul, South Korea; Fagnano, Italy; Chino, Calif.; and the World Cup Final in Munich. It was the USA's most successful shotgun season in history, as we took seven gold medals, eight silver, and five bronze.

"This year's World Shotgun Championships in Barcelona were equally spectacular. We took six gold medals, three silver, two bronze, eight world records, and three Olympic country quota slots for the USA—all with Federal. The Italians, the Germans, and the Danes are looking at us in a whole new light, and they can't wait to get their hands on some of our ammunition.

"All of us with the U.S. shotgun team feel indebted to Federal. We couldn't have dominated the world arena like this with any other ammunition. We didn't think anything could top the superb shells you made for the U.S. Shooting Team that participated at the 1992 Olympics, but you have done it. Please share this letter with your entire staff, because a piece of every medal belongs to them. Thanks again. You've got a real winning team."

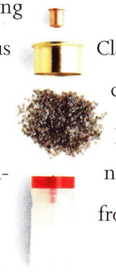
Our innovations and breakthroughs in this area are the direct result of engineering excellence, hard work and sweat equity. We're committed to continue to innovate new products and improve every round.

The reason is simple. We like winning. We like it a lot. And, from the Olympics to the Grand American through all the prestigious shoots and club events—anywhere shooters get together to compete—we intend to keep making ammunition that gives you an edge and helps you win.

ULTRAMATCH™ .22

This is the round that helped the U.S. Shooting Team take an Olympic gold and a silver medal at the Barcelona Olympics. This is the first American-made round to win an Olympic Medal since the Rome Olympics in 1960.

It took years to develop this world class competitor. We make it in limited quantities and make certain each round meets our exacting standards. Precision plus proprietary technologies put this round years ahead of any competitor.



GOLD MEDAL SPORTING CLAYS

We're proud to be the first to introduce the only line of ammunition devoted exclusively to this fast-growing sport. From our entire line of small gauges like .410 and 28 through 12 gauge, these loads are designed to meet all the challenges sporting clays can create.

From rabbit and minis to battues, these rounds give you the uniform patterns and extra-hard shot you need to smoke the target.

And, in 12 gauge, we give you your choice of three loads, including regular, light recoil and high velocity.

Gold Medal® Sporting Clays. It's ammunition that can actually enhance the pleasure of this exciting new sport. And it's only from Federal.

GOLD MEDAL TRAP & SKEET

We've engineered these loads to give you the most consistent and reliable patterning possible. Time after time, round after round, you can count on Gold Medal to deliver the right pattern at the right velocity.

Available in Extra-Lite® and Handicap as well as regular loads, Gold Medal lets you match your ammunition to your shooting style. And, among major American manufacturers, only Federal can bring you the pure pleasure of shooting a paper-hulled shell.

Available with an integral basewad, Gold Medal Plastic Trap & Skeet offers you reloadability that's second to none.

GOLD MEDAL PAPER

A sweet-shooting piece of Americana. Only Federal still brings you paper-hulled shells.

But don't let the sentimental touch fool you. These old favorites are devastating competitors and extremely popular among the best shooters in the world.

Experience shooting the way it was meant to be with Gold Medal Paper sometime soon. (Available in 12 gauge only.)

.308 MATCH

This is quite possibly the most accurate match ammunition available in the world today. Specially blended powders, specially matched primers and meticulously machined brass—they're standard features on every .308 Match round. And the famous 168 grain Sierra Match King bullet is a masterpiece of consistent accuracy.

The .308 Match is the round of choice among world class shooters everywhere as well as military and law enforcement sharpshooters.

A SHORT COURSE IN SHOOTING.

.45 caliber

.410

.375 caliber

.35 caliber

.338 caliber

.30 caliber

7 mm

.270 caliber

The amount of constriction in a gun's muzzle is referred to as the "choke". Different amounts of constriction give different size patterns to a shot charge. For example, a "full choke" forces the shot charge closer together as it leaves the gun, delaying the tendency of the shot to spread. As a result, a "full choke" provides a tighter pattern at longer distances or ranges. At close range, however, a "full choke" pattern may be too small to ensure being on target, or so dense

the game is ruined.

A modified or improved cylinder will provide you with a more open pattern and may be the choke you want to use when hunting.

DRAG

The farther a bullet travels, the slower it goes. The slower it goes, the lower its striking energy. This deceleration and loss of striking power is called the drag coefficient. These bullets were identical (180 grain .30/06) fired from

the same rifle. The first (and shortest) impacted at 100 yards with a velocity of 2470 feet per second. The second at 200 yards (2250 feet per second). The third at 300 yards (2040 feet per second).

SHOT SHELL VELOCITY VS. BARREL LENGTH

GAUGE	RANGES OF BARREL LENGTHS TO WHICH DATA APPLIES (INS.)	LOSS IN VELOCITY FOR EACH 2 INCHES SHORTER BARREL
10	22-32	10 feet per second
12	20-32	15 feet per second
16	20-30	20 feet per second
20	20-30	20 feet per second
28	20-28	25 feet per second
410	20-28	25 feet per second

AVERAGE PELLET COUNT–LEAD SHOT

SHOT SIZE	WEIGHT OF SHOT IN OUNCES (GRAMS) (3% ANTIMONY) ½ (14.17)	⅝ (19.49)	¾ (21.25)	⅞ (24.80)	1 (28.35)	1⅛ (31.89)	1¼ (35.44)	1⅜ (38.98)	1½ (42.52)	1⅝ (46.06)	1⅞ (53.15)	2 (56.70)	2¼ (63.78)
9	292	402	439	512	585	658	731	804	877	951	1097	1170	1316
8½	249	342	373	435	497	559	621	683	745	808	932	994	1118
8	205	282	307	359	410	461	512	564	615	666	769	820	922
7½	175	241	262	306	350	394	437	481	525	569	656	700	787
6	112	155	169	197	225	253	281	309	337	366	422	450	506
5	85	117	127	149	170	191	212	234	255	276	319	340	382
4	67	93	101	118	135	152	169	186	202	219	253	270	304
2	43	60	65	76	87	98	109	120	130	141	163	174	196
BB	25	34	37	44	50	56	62	69	75	81	94	100	112

LEAD SHOT GAME SELECTION GUIDE

GAME	TYPE OF SHELL	RECOMMENDED LEAD SHOT SIZES
Pheasants	Magnum or Classic Hi-Brass	4, 5, 6, 7½
Quail	Classic Hi-Brass or Field Load	7½, 8, 9
Ruffled Grouse & Hungarian Partridge	Classic Hi-Brass or Field Load	6, 7½, 8, 9
Other Grouse & Chukar Partridge	Classic Hi-Brass or Field Load	5, 6, 7½, 8
Doves & Pigeons	Classic Hi-Brass or Field Load	6, 7½, 8, 9
Rabbits	Classic Hi-Brass or Field Load	4, 5, 6, 7½
Woodcock, Snipe, Rail	Field Load	7½, 8, 9
Squirrels	Classic Hi-Brass or Field Load	4, 5, 6, 7½
Wild Turkey	Magnum or Classic Hi-Brass	4, 5, 6
Crows	Classic Hi-Brass or Field Load	4, 5, 6, 7½
Predators	Magnum or Classic Hi-Brass	1 Buck, 2 Buck 3 Buck, 4 Buck, BB, 2
Trap Shooting	Target	7½, 8, 8½
Skeet Shooting	Target	8, 8½, 9
Deer	Magnum	Slug, 000 Buck, 00 Buck

EFFECTIVE RANGES

Different guns and different loads have different effective ranges. Ethical hunters make sure to have the right combination of skill and equipment to make a clean kill regardless of range. We discourage shots of more than 300 yards. While they can be made, they can also be missed, crippling game and creating potentially dangerous situations down range.

#4 lead–0.17 mile

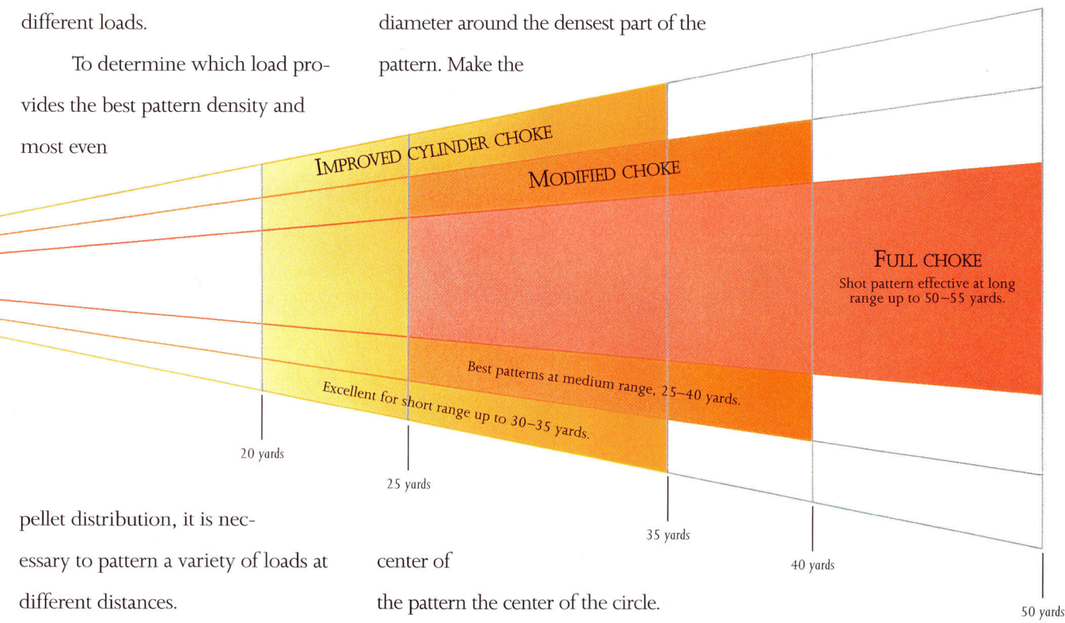
PATTERNING

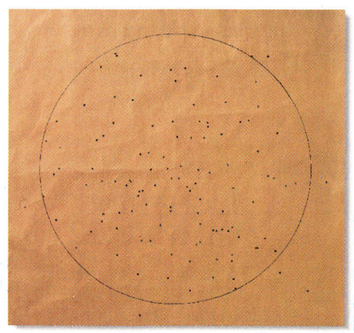
Every shotgun is an individual. Every shotgun throws its own pattern. And every shotgun reacts differently to different loads.

To determine which load provides the best pattern density and most even pellet distribution, it is necessary to pattern a variety of loads at different distances.

To determine the pattern of your shotgun, mark an aiming point on a large piece of paper. Then, following all the appropriate safety procedures, fire a round at the distance that you normally hunt.

Draw a circle with a 30-inch diameter around the densest part of the pattern. Make the center of the pattern the center of the circle.





Analyze the pattern. Is it uniform? Is it dense enough to knock down the game you're hunting?

Repeat the process at different distances.

This will give you a good sense of how your gun patterns at those distances. Repeat the entire process with other loads.

DRAM EQUIVALENT NUMBER

Example: 3¼ Dram Equivalent. This guide number, found on shotshell boxes, gives the weight of black powder used in the past to establish velocities for each load. Black powder is no longer used, so the figure does not represent the actual amount of powder now used. (We now indicate velocity on all steel shot boxes.)

.243 caliber

.22 caliber

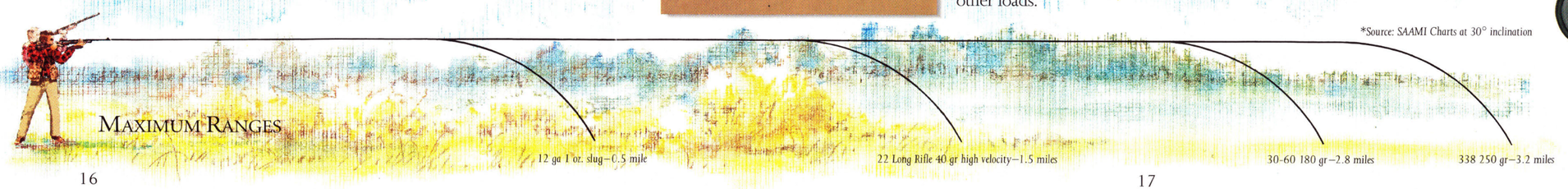
10 gauge

12 gauge

16 gauge

20 gauge

28 gauge



*Source: SAAMI Charts at 30° inclination

HI-POWER® SHOTGUN SHELLS

High brass and high velocity combined with famous Federal reliability make these shells a solid choice for larger upland game. Available in gauges from .410 and up.

GAME LOADS

These shells put performance into the pattern when you're hunting small game. Consistency and reliability make these an exceptional value.

DOVE LOADS

Year after year, these are among our most popular loads. They're proven performers that have become as much a part of some hunting seasons as a good dog and your buddy's bad cooking. They're old friends that are available everywhere.

LIGHTNING™ RIMFIRE .22

A versatile, cost-effective .22 load that's perfect for all kinds of hunting, shooting or plinking. A good, reliable value. Would you expect anything less from Federal?

HI-POWER® SHOTGUN SHELLS

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
H127	12	2 3/4	70	3 3/4	1280	1 1/4	35.44	4,6,7 1/2
H164	16	2 3/4	70	3 1/4	1245	1 1/8	31.89	6
H203	20	2 3/4	70	2 3/4	1170	1	28.35	6,7 1/2
H415	410	3	76	Max.	1135	11/16	19.49	4,6,7 1/2
H414	410	2 1/2	63.5	Max.	1200	1/2	14.17	6

GAME LOAD SHOTGUN SHELLS

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
H121	12	2 3/4	70	3 1/4	1290	1	28.35	6,7 1/2,8
H160	16	2 3/4	70	2 1/2	1165	1	28.35	6,7 1/2,8
H200	20	2 3/4	70	2 1/2	1210	7/8	24.80	6,7 1/2,8

HEAVY GAME LOAD SHOTGUN SHELLS

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
HGL12	12	2 3/4	70	3 1/4	1255	1 1/8	31.89	6,7 1/2,8
HGL20	20	2 3/4	70	2 1/2	1165	1	28.35	6,7 1/2,8

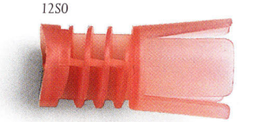
DOVE AND SMALL GAME SHOTGUN SHELLS

(20 rounds per carton)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
FD12	12	2 3/4	70	3 1/4	1290	1	28.35	7 1/2,8
FD20	20	2 3/4	70	2 1/2	1210	7/8	24.80	7 1/2,8

12C1

12S0



12S3

12S4

20S1

28S1

410SC

PLASTIC WAD COLUMNS

GOLD MEDAL® TWO-PIECE WAD COLUMN

U.S. Patent 3,289,586
The plastic wad that's made the Gold Medal Paper famous. Totally enclosed, air-cushion design with internal pillar for controlled collapse.
12C1—12 Gauge: Standard version, red base.

GOLD MEDAL® ONE-PIECE WAD COLUMN

U.S. Patent 3,622,683
A one-piece plastic wad with great flexibility. Spring action design. Provides no-tilt, controlled compression on loading and firing. Gives multiple sealing.

12-GAUGE:

12S0—1 oz. loads in Gold Medal target shells.
12S3—1⅛ oz. loads in Gold Medal target shells and hunting shells.
12S4—1¼ oz. loads in hunting shells.

20-GAUGE:

20S1—⅞ and 1 oz. loads in all shells.

28-GAUGE:

28S1—¾ oz. loads.

SHOT CUPS

410 Gauge: complete one-piece plastic wad column.

PRIMERS

FEDERAL NUMBER	TYPE	USE	NOMINAL DIAMETER
100	Small Pistol	Std.velocity pistol and revolver	.175
150	Large Pistol	Std. and magnum pistol and revolver	.210
155	Large Magnum Pistol	Magnum revolver	.210
200	Small Magnum Pistol	High velocity and magnum pistol and revolver	.175
205	Small Rifle	Thick cup design for 17 Rem. and .22 caliber centerfire	.175
210	Large Rifle	Standard rifle	.210
215	Large Mag. Rifle	Magnum rifle	.210
205M	Small Rifle Match		.175
210M	Large Rifle Match		.210
209A	Shotshell	12, 16, 20, 28 and 410 gauge	.243

LIGHTNING™ RIMFIRE 22 (Approximate)

	TYPE	FEDERAL LOAD NO.	CARTRIDGE PER BOX	CALIBER	BULLET WGT. IN GRAINS	BULLET STYLE	VELOCITY IN FEET PER SECOND MUZZLE	50 YDS.	100 YDS.	150 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	50 YDS.	100 YDS.	150 YDS.	WIND DRIFT IN INCHES 10 MPH CROSSWIND 50 YDS.	100 YDS.	150 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. 50 YDS.	100 YDS.	150 YDS.	50 YDS.	100 YDS.	150 YDS.
High Vel.	Lightning	510	50	22 Long Rifle HV	40	Solid	1255	1100	1015	940	140	110	92	80	1.5	5.5	11.4	⊕	-6.5	-21.0	+2.7	⊕	-10.8

SOME OF OUR BEST LETTERS ARRIVE WITH STAMPS LIKE THESE.

Here at Federal, we've always made it a point to support hunting, wildlife and conservation organizations. We've also been active in promoting hunter and shooter education and safety.

Our files are full of letters of thanks for our work and our financial support in these critical areas. No matter where you hunt or shoot, you'll probably find Federal's money and resources at work nearby.

Ducks Unlimited. Pheasants Forever. The National Wild Turkey Federation. Whitetails Unlimited. The Rocky Mountain Elk Foundation. The Hunter Education Association. The Izaak Walton League of America. The 4-H Clubs. The Boy Scouts of America. The United States Shooting Team. The National Rifle Association. The Safari Club.

These are just a few of the organizations whose hard work we support and endorse. We encourage you to help support them as well.

And we encourage everyone to hunt and shoot responsibly; to respect the rights of others; to get involved in local and regional groups who help preserve and perpetuate hunting and shooting sports.

As corporate sponsors, as concerned individuals, it's up to each of us to do our part.

CENTERFIRE RIFLE BALLISTICS

PREMIUM® HUNTING RIFLE BALLISTICS (Approximate)

Usage Key: [1] = Varmints, predators, small game [2] = Medium game [3] = Large, heavy game [4] = Dangerous game [5] = Target shooting, training, practice

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE*	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND (TO NEAREST 10 FEET) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	ENERGY IN FOOT-POUNDS (TO NEAREST 5 FOOT-POUNDS) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.
[1]	P223E	223 Rem. (5.56x45mm)	55	3.56	Boat-tail HP	205	3240	2770	2340	1950	1610	1330	1280	935	670	465	315	215
[1]	P22250B	22-250 Rem.	55	3.56	Boat-tail HP	210	3680	3280	2920	2590	2280	1990	1655	1315	1040	815	630	480
[2]	P243C	243 Win. (6.16x51mm)	100	6.48	Boat-tail SP	210	2960	2760	2570	2380	2210	2040	1950	1690	1460	1260	1080	925
[1]	P243D	243 Win. (6.16x51mm)	85	5.50	Boat-tail HP	210	3320	3070	2830	2600	2380	2180	2080	1770	1510	1280	1070	890
[2]	P243E	243 Win. (6.16x51mm)	100	6.48	Nosler Partition**	210	2960	2730	2510	2300	2100	1910	1945	1650	1395	1170	975	805
[2]	P6C	6mm Rem.	100	6.48	Nosler Partition	210	3100	2830	2570	2330	2100	1890	2135	1775	1470	1205	985	790
[2]	P257B	257 Roberts (High-Velocity + P)	120	7.77	Nosler Partition	210	2780	2560	2360	2160	1970	1790	2060	1750	1480	1240	1030	855
[2]	P2506C	25-06 Rem.	117	7.58	Boat-tail SP	210	2990	2770	2570	2370	2190	2000	2320	2000	1715	1465	1240	1045
[2]	P6555A	6.5x55 Swedish	140	9.07	Nosler Partition	210	2550	2350	2170	1990	1820	1660	2020	1725	1460	1230	1030	860
[2]	P270C	270 Win.	150	9.72	Boat-tail SP	210	2850	2660	2480	2300	2130	1970	2705	2355	2040	1760	1510	1290
[2]	P270D	270 Win.	130	8.42	Boat-tail SP	210	3060	2830	2620	2410	2220	2030	2700	2320	1980	1680	1420	1190
[2]	P270E	270 Win.	150	9.72	Nosler Partition	210	2850	2590	2340	2100	1880	1670	2705	2225	1815	1470	1175	930
[2]	P270T1	270 Win.	140	9.07	Trophy Bonded	210	2940	2700	2480	2260	2060	1860	2685	2270	1905	1590	1315	1080
[2]	P730A	7-30 Waters	120	7.77	Boat-tail SP	210	2700	2300	1930	1600	1330	1140	1940	1405	990	685	470	345
[2]	P7C	7mm Mauser (7x57mm Mauser)	140	9.07	Nosler Partition	210	2660	2450	2260	2070	1890	1730	2200	1865	1585	1330	1110	930
[2]	P764A	7x64 Brenneke	160	10.37	Nosler Partition	210	2650	2480	2310	2150	2000	1850	2495	2180	1895	1640	1415	1215
[2]	P280A	280 Rem.	150	9.72	Nosler Partition	210	2890	2620	2370	2140	1910	1710	2780	2295	1875	1520	1215	970
[2]	P708A	7mm-08	140	9.07	Nosler Partition	210	2800	2590	2390	2200	2020	1840	2435	2085	1775	1500	1265	1060
[2]	P7RD	7mm Rem. Magnum	150	9.72	Boat-tail SP	215	3110	2920	2750	2580	2410	2250	3220	2850	2510	2210	1930	1690
[3]	P7RE	7mm Rem. Magnum	165	10.69	Boat-tail SP	215	2950	2800	2650	2510	2370	2230	3190	2865	2570	2300	2050	1825
[3]	P7RF	7mm Rem. Magnum	160	10.37	Nosler Partition	215	2950	2770	2590	2420	2250	2090	3090	2715	2375	2075	1800	1555
[2]	P7RG	7mm Rem. Magnum	140	9.07	Nosler Partition	215	3150	2930	2710	2510	2320	2130	3085	2660	2290	1960	1670	1415
[3] NEW	P7RT1	7mm Rem. Magnum	175	11.34	Trophy Bonded	215	2860	2660	2470	2290	2120	1950	3180	2750	2375	2040	1740	1475
[2]	P3030D	30-30 Win.	170	11.01	Nosler Partition	210	2200	1900	1620	1380	1190	1060	1830	1355	990	720	535	425
[2]	P308C	308 Win. (7.62x51mm)	165	10.69	Boat-tail SP	210	2700	2520	2330	2160	1990	1830	2670	2310	1990	1700	1450	1230
[3]	P308E	308 Win. (7.62x51mm)	180	11.66	Nosler Partition	210	2620	2430	2240	2060	1890	1730	2745	2355	2005	1700	1430	1200
[3] NEW	P308T1	308 Win.	165	10.69	Trophy Bonded	210	2700	2480	2280	2080	1900	1720	2670	2260	1900	1590	1315	1085
[2]	P3006D	30-06 Spring (7.62x63mm)	165	10.69	Boat-tail SP	210	2800	2610	2420	2240	2070	1910	2870	2490	2150	1840	1580	1340
[3]	P3006F	30-06 Spring (7.62x63mm)	180	11.66	Nosler Partition	210	2700	2500	2320	2140	1970	1810	2910	2510	2150	1830	1550	1350
[2]	P3006G	30-06 Spring (7.62x63mm)	150	9.72	Boat-tail SP	210	2910	2690	2480	2270	2070	1880	2820	2420	2040	1710	1430	1180
[3]	P3006L	30-06 Spring (7.62x63mm)	180	11.66	Boat-tail SP	210	2700	2540	2380	2220	2080	1930	2915	2570	2260	1975	1720	1495
[2]	P3006T1	30-06 Spring (7.62x63mm)	165	10.69	Trophy Bonded	210	2800	2540	2290	2050	1830	1630	2870	2360	1915	1545	1230	975
[3]	P300WC	300 Win. Magnum	200	12.96	Boat-tail SP	215	2830	2680	2530	2380	2240	2110	3560	3180	2830	2520	2230	1970

USAGE	WIND DRIFT IN INCHES 10 MPH CROSSWIND 100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. AVERAGE RANGE 50 YDS.	100 YDS.	200 YDS.	LONG RANGE 300 YDS.	50 YDS.	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	TEST BARREL LENGTH INCHES	FEDERAL LOAD NO.
[1]	1.3	5.8	14.2	27.7	47.6	-0.3	⊕	-2.7	-10.8	+0.4	+1.4	⊕	-6.7	-20.5	-43.4	24	P223E
[1]	0.8	3.6	8.4	15.8	26.3	-0.4	⊕	-1.7	-7.6	0	+0.9	⊕	-5.0	-15.1	-32.0	24	P22250B
[2]	0.6	2.6	6.1	11.3	18.4	-0.2	⊕	-3.1	-11.4	+0.6	+1.5	⊕	-6.8	-19.8	-39.9	24	P243C
[1]	0.7	2.7	6.3	11.6	18.8	-0.3	⊕	-2.2	-8.8	+0.2	+1.1	⊕	-5.5	-16.1	-32.8	24	P243D
[2]	0.7	3.1	7.3	13.5	22.1	-0.2	⊕	-3.2	-11.9	+0.6	+1.6	⊕	-7.1	-20.9	-42.5	24	P243E
[2]	0.8	3.3	7.9	14.7	24.1	-0.3	⊕	-2.9	-11.0	+0.5	+1.4	⊕	-6.7	-19.8	-39.0	24	P6C
[2]	0.8	3.3	7.7	14.3	23.5	-0.1	⊕	-3.8	-14.0	+0.8	+1.9	⊕	-8.2	-24.0	-48.9	24	P257B
[2]	0.7	2.8	6.5	12.0	19.6	-0.2	⊕	-3.0	-11.4	+0.5	+1.5	⊕	-6.8	-19.9	-40.4	24	P2506C
[2]	0.8	3.5	8.3	15.1	25.1	0	⊕	-4.8	-17.1	+1.2	+2.4	⊕	-9.8	-28.2	-57.7	24	P6555A
[2]	0.7	2.7	6.3	11.6	18.9	-0.2	⊕	-3.4	-12.5	+0.7	+1.7	⊕	-7.4	-21.4	-43.0	24	P270C
[2]	0.7	2.8	6.6	12.1	19.7	-0.2	⊕	-2.8	-10.7	+0.5	+1.4	⊕	-6.5	-19.0	-38.5	24	P270D
[2]	0.9	3.9	9.2	17.3	28.5	-0.2	⊕	-3.7	-13.8	+0.8	+1.9	⊕	-8.3	-24.4	-50.5	24	P270E
[2]	0.8	3.2	7.6	14.2	23.0	-0.2	⊕	-3.3	-12.2	+0.6	+1.6	⊕	-7.3	-21.5	-43.7	24	P270T1
[2]	1.6	7.2	17.7	34.5	58.1	0	⊕	-5.2	-19.8	+1.2	+2.6	⊕	-12.0	-37.6	-81.7	24	P730A
[2]	1.3	3.2	8.2	15.4	23.4	-0.1	⊕	-4.3	-15.4	+1.0	+2.1	⊕	-9.0	-26.1	-52.9	24	P7C
[2]	0.7	2.8	6.6	12.3	19.5	-0.1	⊕	-4.2	-14.9	+0.9	+2.1	⊕	-8.7	-24.9	-49.4	24	P764A
[2]	0.9	3.8	9.0	16.8	27.8	-0.2	⊕	-3.6	-13.4	+0.7	+1.8	⊕	-8.0	-23.8	-49.2	24	P280A
[2]	0.8	3.1	7.3	13.5	21.8	-0.2	⊕	-3.7	-13.5	+0.8	+1.8	⊕	-8.0	-23.1	-46.6	24	P708A
[2]	0.5	2.2	5.1	9.3	15.0	-0.3	⊕	-2.6	-9.8	+0.4	+1.3	⊕	-5.9	-17.0	-34.2	24	P7RD
[3]	0.5	2.0	4.6	8.4	13.5	-0.2	⊕	-3.0	-10.9	+0.5	+1.5	⊕	-6.4	-18.4	-36.6	24	P7RE
[3]	0.6	2.5	5.6	10.4	16.9	-0.2	⊕	-3.1	-11.3	+0.6	+1.5	⊕	-6.7	-19.4	-39.0	24	P7RF
[2]	0.6	2.6	6.0	11.1	18.2	-0.3	⊕	-2.6	-9.9	+0.4	+1.3	⊕	-6.0	-17.5	-35.6	24	P7RG
[3] NEW	0.7	2.8	6.5	12.1	19.6	-0.2	⊕	-3.4	-12.5	+0.7	+1.7	⊕	-7.4	-21.5	-43.3	24	P7RT1
[2]	0.9	8.0	19.4	36.7	59.8	-0.3	⊕	-8.3	-29.8	+2.4	+4.1	⊕	-17.4	-52.4	-109.4	24	P3030D
[2]	0.7	3.0	7.0	13.0	21.1	-0.1	⊕	-4.0	-14.4	+0.9	+2.0	⊕	-8.4	-24.3	-49.0	24	P308C
[3]	0.8	3.3	7.7	14.3	23.3	-0.1	⊕	-4.4	-15.8	+1.0	+2.2	⊕	-9.2	-26.5	-53.6	24	P308E
[3] NEW	0.8	3.5	8.2	15.2	24.9	-0.1	⊕	-4.1	-15.0	+0.9	+2.1	⊕	-8.8	-25.6	-52.2	24	P308T1
[2]	0.7	2.8	6.6	12.3	19.9	-0.2	⊕	-3.6	-13.2	+0.8	+1.8	⊕	-7.8	-22.4	-45.2	24	P3006D
[3]	0.7	3.0	7.3	13.4	27.7	-0.1	⊕	-4.0	-14.6	+0.9	+2.0	⊕	-8.6	-24.6	-49.6	24	P3006F
[2]	0.7	3.0	7.1	13.4	22.0	-0.2	⊕	-3.3	-12.4	+0.6	+1.7	⊕	-7.4	-21.5	-43.7	24	P3006G
[3]	0.6	2.6	6.0	11.0	17.8	-0.1	⊕	-3.9	-13.9	+0.9	+1.9	⊕	-8.1	-23.1	-46.1	24	P3006L
[2]	1.0	4.0	9.6	17.8	29.7	-0.1	⊕	-3.9	-14.5	+0.8	+2.0	⊕	-8.7	-25.4	-53.1	24	P3006T1
[3]	0.5	2.2	5.0	9.2	14.9	-0.2	⊕	-3.4	-12.2	+0.7	+1.7	⊕	-7.1	-20.4	-40.5	24	P300WC

PREMIUM® SAFARI™ RIFLE BALLISTICS (Approximate)

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE*	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND (TO NEAREST 10 FEET) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	ENERGY IN FOOT-POUNDS (TO NEAREST 5 FOOT-POUNDS) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.
[3]	P300HA	300 H&H Magnum	180	11.66	Nosler Partition	215	2880	2620	2380	2150	1930	1730	3315	2750	2260	1840	1480	1190
[3]	P300WD2	300 Win. Magnum	180	11.66	Nosler Partition	215	2960	2700	2450	2210	1990	1780	3500	2905	2395	1955	1585	1270
[3]	P300WT1	300 Win. Magnum	200	12.96	Trophy Bonded	215	2800	2570	2350	2150	1950	1770	3480	2935	2460	2050	1690	1385
[3]	P338A2	338 Win. Magnum	210	13.60	Nosler Partition	215	2830	2590	2370	2160	1960	1770	3735	3140	2620	2170	1785	1455
[3]	P338B2	338 Win. Magnum	250	16.20	Nosler Partition	215	2660	2400	2150	1910	1690	1500	3925	3185	2555	2055	1590	1245
[3]	P338T1	338 Win. Magnum	225	14.58	Trophy Bonded	215	2800	2560	2330	2110	1900	1710	3915	3265	2700	2220	1800	1455
[4]	P375D	375 H&H Magnum	300	19.44	Solid	215	2530	2170	1840	1550	1310	1140	4265	3140	2260	1605	1140	860
[4]	P375F	375 H&H Magnum	300	19.44	Nosler Partition	215	2530	2320	2120	1930	1750	1590	4265	3585	2995	2475	2040	1675
[4]	P375T1	375 H&H Magnum	300	19.44	Trophy Bonded	215	2530	2280	2040	1810	1610	1425	4265	3450	2765	2190	1725	1350
[3]	P458A	458 Win. Magnum	350	22.68	Soft Point	215	2470	1990	1570	1250	1060	950	4740	3065	1915	1205	870	705
[4]	P458B	458 Win. Magnum	510	33.04	Soft Point	215	2090	1820	1570	1360	1190	1080	4945	3730	2790	2080	1605	1320
[4]	P458C	458 Win. Magnum	500	32.40	Solid	215	2090	1870	1670	1480	1320	1190	4850	3880	3085	2440	1945	1585
[4] NEW	P458T1	458 Win. Magnum	400	25.92	Trophy Bonded	215	2380	2170	1960	1770	1590	1430	5030	4165	3415	2785	2255	1825
[4] NEW	P458T2	458 Win. Magnum	500	32.40	Trophy Bonded	215	2090	1870	1660	1480	1310	1180	4850	3870	3065	2420	1915	1550
[4] NEW	P458T3	458 Win. Magnum	500	32.40	Trophy Bonded Solid	215	2090	1860	1650	1460	1300	1170	4850	3845	3025	2365	1865	1505
[4]	P416A	416 Rigby	410	26.57	Weldcore SP	216	2370	2110	1870	1640	1440	1280	5115	4050	3165	2455	1895	1485
[4]	P416B	416 Rigby	410	26.57	Solid	216	2370	2110	1870	1640	1440	1280	5115	4050	3165	2455	1895	1485
[4] NEW	P416T1	416 Rigby	400	25.92	Trophy Bonded	216	2370	2210	2050	1900	1750	1620	4990	4315	3720	3185	2720	2315
[4] NEW	P416T2	416 Rigby	400	25.92	Trophy Bonded Solid	216	2370	2120	1890	1660	1460	1290	4990	3975	3130	2440	1895	1480
[4]	P470A	470 Nitro Express	500	32.40	Weldcore SP	216	2150	1890	1650	1440	1270	1140	5130	3965	3040	2310	1790	1435
[4]	P470B	470 Nitro Express	500	32.40	Woodleigh Solid	216	2150	1890	1650	1440	1270	1140	5130	3965	3040	2310	1790	1435
[4] NEW	P470T1	470 Nitro Express	500	32.40	Trophy Bonded	216	2150	1940	1740	1560	1400	1260	5130	4170	3360	2695	2160	1750
[4] NEW	P470T2	470 Nitro Express	500	32.40	Trophy Bonded Solid	216	2150	1940	1740	1560	1400	1260	5130	4170	3360	2695	2160	1750

USAGE	WIND DRIFT IN INCHES 10 MPH CROSSWIND 100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. AVERAGE RANGE 50 YDS.	100 YDS.	200 YDS.	LONG RANGE 300 YDS.	50 YDS.	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	TEST BARREL LENGTH INCHES	FEDERAL LOAD NO.
[3]	0.9	3.7	8.8	16.3	27.1	-0.3	⊕	-3.5	-13.3	+0.7	+1.8	⊕	-8.0	-23.4	-48.6	24	P300HA
[3]	0.9	3.5	8.4	15.8	25.9	-0.2	⊕	-3.3	-12.4	+0.6	+1.6	⊕	-7.5	-22.1	-45.4	24	P300WD2
[3]	0.9	3.4	8.1	14.9	24.5	-0.1	⊕	-3.7	-13.8	+0.8	+1.9	⊕	-8.2	-23.9	-48.8	24	P300WT1
[3]	0.9	3.4	8.2	15.2	24.9	-0.2	⊕	-3.6	-13.6	+0.8	+1.8	⊕	-8.1	-23.6	-48.3	24	P338A2
[3]	1.1	4.5	10.8	20.3	33.6	-0.1	⊕	-4.6	-16.7	+1.1	+2.3	⊕	-9.8	-29.1	-60.2	24	P338B2
[3]	0.9	3.7	8.7	16.1	26.7	-0.2	⊕	-3.8	-14.1	+0.8	+1.9	⊕	-8.4	-24.5	-50.6	24	P338T1
[4]	1.7	7.2	17.6	33.9	56.5	⊕	-1.1	-9.1	-27.5	+0.5	⊕	-7.0	-24.2	-55.8	-106.5	24	P375D
[4]	0.9	3.9	9.1	17.0	27.8	0	⊕	-5.0	-17.7	+1.2	+2.5	⊕	-10.3	-29.9	-60.8	24	P375F
[4]	1.1	4.8	11.3	21.5	35.4	-0.1	⊕	-5.3	-18.8	+1.3	+2.6	⊕	-10.9	-32.8	-67.8	24	P375T1
[3]	2.5	11.0	27.6	52.6	83.9	⊕	-1.5	-11.0	-34.9	+0.1	⊕	-7.5	-29.1	-71.1	-138.0	24	P458A
[4]	1.9	7.9	18.9	35.3	56.8	⊕	-1.8	-13.7	-39.7	+0.4	⊕	-9.1	-32.3	-73.9	-138.0	24	P458B
[4]	1.5	6.1	14.5	26.9	43.7	⊕	-1.7	-12.9	-36.7	+0.4	⊕	-8.5	-29.5	-66.2	-122.0	24	P458C
[4] NEW	1.1	4.5	10.7	19.9	32.7	⊕	-0.2	-6.3	-21.5	+0.1	⊕	-5.9	-20.9	-47.1	-87.0	24	P458T1
[4] NEW	1.5	6.2	14.6	27.3	44.5	⊕	-0.7	-10.0	-31.8	+0.4	⊕	-8.5	-29.7	-66.8	-124.2	24	P458T2
[4] NEW	1.5	6.4	15.2	28.3	46.1	⊕	-0.7	-10.1	-32.2	+0.4	⊕	-8.6	-30.0	-67.8	-126.3	24	P458T3
[4]	1.3	5.7	13.6	25.6	42.3	⊕	-1.2	-9.8	-28.5	+0.6	⊕	-7.4	-24.8	-55.0	-101.6	24	P416A
[4]	1.3	5.7	13.6	25.6	42.3	⊕	-1.2	-9.8	-28.5	+0.6	⊕	-7.4	-24.8	-55.0	-101.6	24	P416B
[4] NEW	0.8	3.4	7.9	14.7	23.8	⊕	-0.2	-6.0	-20.1	+0.1	⊕	-5.7	-19.6	-43.3	-78.4	24	P416T1
[4] NEW	1.3	5.5	13.2	24.8	41.0	⊕	-0.2	-6.8	-23.2	+0.1	⊕	-6.3	-22.5	-51.5	-96.7	24	P416T2
[4]	1.6	7.0	16.6	31.1	50.6	⊕	-1.6	-12.6	-36.2	+0.8	⊕	-9.3	-31.3	-69.7	-128.6	24	P470A
[4]	1.6	7.0	16.6	31.1	50.6	⊕	-1.6	-12.6	-36.2	+0.8	⊕	-9.3	-31.3	-69.7	-128.6	24	P470B
[4] NEW	1.3	5.5	13.0	24.3	39.7	⊕	-0.6	-9.0	-28.9	+0.3	⊕	-7.8	-27.1	-60.8	-112.4	24	P470T1
[4] NEW	1.3	5.5	13.0	24.3	39.7	⊕	-0.6	-9.0	-28.9	+0.3	⊕	-7.8	-27.1	-60.8	-112.4	24	P470T2

PREMIUM® VARMINT RIFLE BALLISTICS (Approximate)

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE*	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND (TO NEAREST 10 FEET) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	ENERGY IN FOOT-POUNDS (TO NEAREST 5 FOOT-POUNDS) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.
[1]	P223V	223 Rem. (5.56x45mm)	40	2.59	Hollow Point Varmint	205	3650	3010	2450	1950	1530	1210	1185	805	535	340	205	130
[1]	P22250V	22-250 Rem.	40	2.59	Hollow Point Varmint	210	4000	3320	2720	2200	1740	1360	1420	980	660	430	265	165
[1]	P243V	243 Win. (6.16x51mm)	60	3.89	Hollow Point Varmint	210	3600	3110	2660	2260	1890	1560	1725	1285	945	680	475	325
[1]	P2506V	25-06 Rem.	90	5.83	Hollow Point Varmint	210	3440	3040	2680	2340	2030	1750	2365	1850	1435	1100	825	610

USAGE	WIND DRIFT IN INCHES 10 MPH CROSSWIND 100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. AVERAGE RANGE 50 YDS.	100 YDS.	200 YDS.	LONG RANGE 300 YDS.	50 YDS.	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	TEST BARREL LENGTH INCHES	FEDERAL LOAD NO.
[1]	1.5	6.5	16.1	32.3	56.9	-0.4	⊕	-2.4	-10.7	+0.2	+1.2	⊕	-7.1	-23.4	-54.2	24	P223V
[1]	1.3	5.7	14.0	27.9	49.2	-0.4	⊕	-1.7	-8.1	0	+0.8	⊕	-5.6	-18.4	-42.8	24	P22250V
[1]	1.1	4.8	11.7	22.6	38.7	-0.4	⊕	-2.1	-9.2	+0.2	+1.1	⊕	-6.0	-18.9	-41.6	24	P243V
[1]	1.0	4.1	9.8	18.7	31.3	-0.3	⊕	-2.3	-9.4	+0.2	+1.1	⊕	-6.0	-18.3	-39.2	24	P2506V

*HP = Hollow Point SP = Soft Point **"Nosler" and "Partition" are registered trademarks of Nosler Bullets, Inc.
+P ammunition is loaded to a higher pressure. Use only in firearms so recommended by the gun manufacturer.

These trajectory tables were calculated by computer using the best available data for each load. Trajectories are representative of the nominal behavior of each load at standard conditions (59°F temperature; barometric pressure of 29.53 inches; altitude at sea level). Shooters are cautioned that actual trajectories may differ due to variations in altitude, atmospheric conditions, guns, sights, and ammunition.

Trophy Bonded | Sierra Boat-Tail | Sierra Boat-Tail Hollow Point | Nosler Partion | Woodleigh Solid | Hollow Point Varmint

CENTERFIRE RIFLE BALLISTICS

Full Metal Jacket Boat-Tail

Soft Point Round Nose

Soft Point Regular

Soft Point Flat Nose

Hollow Point Flat Nose

CLASSIC® CENTERFIRE RIFLE BALLISTICS (Approximate)

Usage Key: [1] = Varmints, predators, small game [2] = Medium game [3] = Large, heavy game [4] = Dangerous game [5] = Target shooting, training, practice

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE**	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND (TO NEAREST 10 FEET) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	ENERGY IN FOOT-POUNDS (TO NEAREST 5 FOOT-POUNDS) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	WIND DRIFT IN INCHES 10 MPH CROSSWIND 100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. AVERAGE RANGE 50 YDS.	100 YDS.	200 YDS.	300 YDS.	LONG RANGE 50 YDS.	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	TEST BARREL LENGTH INCHES	FEDERAL LOAD NO.
[1]	222A	222 Rem. (5.56x43mm)	50	3.24	Hi-Shok Soft Point	205	3140	2600	2120	1700	1350	1110	1095	750	500	320	200	135	1.7	7.3	18.3	36.4	63.1	-0.2	⊕	-3.7	-15.3	+0.7	+1.9	⊕	-9.7	-31.6	-71.3	24	222A
[5]	222B		55	3.56	Hi-Shok FMJ Boat-tail	205	3020	2740	2480	2230	1990	1780	1115	915	750	610	485	385	0.9	3.4	8.5	16.8	26.3	-0.2	⊕	-3.1	-12.0	+0.6	+1.6	⊕	-7.3	-21.5	-44.6	24	222B
[1]	223A	223 Rem. (5.56x45mm)	55	3.56	Hi-Shok Soft Point	205	3240	2750	2300	1910	1550	1270	1280	920	650	445	295	195	1.4	6.1	15.0	29.4	50.8	-0.3	⊕	-3.2	-12.9	+0.5	+1.6	⊕	-8.2	-26.1	-58.3	24	223A
[5]	223B		55	3.56	Hi-Shok FMJ Boat-tail	205	3240	2950	2670	2410	2170	1940	1280	1060	875	710	575	460	0.8	3.3	7.8	14.5	24.0	-0.3	⊕	-2.5	-9.9	+0.3	+1.3	⊕	-6.1	-18.3	-37.8	24	223B
[1]	22250A	22-250 Rem.	55	3.56	Hi-Shok Soft Point	210	3680	3140	2660	2220	1830	1490	1655	1200	860	605	410	270	1.2	5.2	12.5	24.4	42.0	-0.4	⊕	-2.1	-9.1	+0.1	+1.0	⊕	-6.0	-19.1	-42.6	24	22250A
[1]	243A	243 Win. (6.16x51mm)	80	5.18	Hi-Shok Soft Point	210	3350	2960	2590	2260	1950	1670	1995	1550	1195	905	675	495	1.0	4.3	10.4	19.8	33.3	-0.3	⊕	-2.5	-10.2	+0.3	+1.3	⊕	-6.4	-19.7	-42.2	24	243A
[2]	243B		100	6.48	Hi-Shok Soft Point	210	2960	2700	2450	2220	1990	1790	1945	1615	1330	1090	880	710	0.9	3.6	8.4	15.7	25.8	-0.2	⊕	-3.3	-12.4	+0.6	+1.6	⊕	-7.5	-22.0	-45.4	24	243B
[1]	6A	6mm Rem.	80	5.18	Hi-Shok Soft Point	210	3470	3060	2690	2350	2040	1750	2140	1665	1290	980	735	540	1.0	4.1	9.9	18.8	31.6	-0.3	⊕	-2.2	-9.3	+0.2	+1.1	⊕	-5.9	-18.2	-39.0	24	6A
[2]	6B		100	6.48	Hi-Shok Soft Point	210	3100	2830	2570	2330	2100	1890	2135	1775	1470	1205	985	790	0.8	3.3	7.9	14.7	24.1	-0.3	⊕	-2.9	-11.0	+0.5	+1.4	⊕	-6.7	-19.8	-40.6	24	6B
[2]	2506B	25-06 Rem.	117	7.58	Hi-Shok Soft Point	210	2990	2730	2480	2250	2030	1830	2320	1985	1645	1350	1100	885	0.8	3.4	8.1	15.1	24.9	-0.2	⊕	-3.2	-12.0	+0.6	+1.6	⊕	-7.2	-21.4	-44.0	24	2506B
[2]	270A	270 Win.	130	8.42	Hi-Shok Soft Point	210	3060	2800	2560	2330	2110	1900	2700	2265	1890	1565	1285	1045	0.8	3.2	7.6	14.2	23.3	-0.2	⊕	-2.9	-11.2	+0.5	+1.5	⊕	-6.8	-20.0	-41.1	24	270A
[2]	270B		150	9.72	Hi-Shok Soft Point RN	210	2850	2500	2180	1890	1620	1390	2705	2085	1585	1185	870	640	1.2	5.3	12.8	24.5	41.3	-0.1	⊕	-4.1	-15.5	+0.9	+2.0	⊕	-9.4	-28.6	-61.0	24	270B
[2]	7A	7mm Mauser	175	11.34	Hi-Shok Soft Point RN	210	2440	2140	1860	1600	1380	1200	2315	1775	1340	1000	740	565	1.5	6.2	15.0	28.7	47.8	-0.1	⊕	-6.2	-22.6	+1.6	+3.1	⊕	-13.3	-40.1	-84.6	24	7A
[2]	7B	(7x57mm Mauser)	140	9.07	Hi-Shok Soft Point	210	2660	2450	2260	2070	1890	1730	2200	1865	1585	1330	1110	930	1.3	3.2	8.2	15.4	23.4	-0.1	⊕	-4.3	-15.4	+1.0	+2.1	⊕	-9.0	-26.1	-52.9	24	7B
[2]	280B	280 Rem.	150	9.72	Hi-Shok Soft Point	210	2890	2670	2460	2260	2060	1880	2780	2370	2015	1695	1420	1180	0.7	3.1	7.2	13.4	21.9	-0.2	⊕	-3.4	-12.6	+0.7	+1.7	⊕	-7.5	-21.8	-44.3	24	280B
[2]	7RA	7mm Rem. Magnum	150	9.72	Hi-Shok Soft Point	215	3110	2830	2570	2320	2090	1870	3220	2670	2200	1790	1450	1160	0.8	3.4	8.1	15.1	24.9	-0.3	⊕	-2.9	-11.0	+0.5	+1.4	⊕	-6.7	-19.9	-41.0	24	7RA
[3]	7RB		175	11.34	Hi-Shok Soft Point	215	2860	2650	2440	2240	2060	1880	3180	2720	2310	1960	1640	1370	0.7	3.1	7.2	13.3	21.7	-0.2	⊕	-3.5	-12.8	+0.7	+1.7	⊕	-7.6	-22.1	-44.9	24	7RB
[1]	30CA	30 Carbine (7.62x33mm)	110	7.13	Hi-Shok Soft Point RN	205	1990	1570	1240	1040	920	840	965	600	375	260	210	175	3.4	15.0	35.5	63.2	96.7	+0.6	⊕	-12.8	-46.9	+3.9	+6.4	⊕	-27.7	-81.8	-167.8	18	30CA
[2]	76239B	7.62x39mm Soviet	123	7.97	Hi-Shok Soft Point	210	2300	2030	1780	1550	1350	1200	1445	1125	860	655	500	395	1.5	6.4	15.2	28.7	47.3	+0.2	⊕	-7.0	-25.1	+1.9	+3.5	⊕	-14.5	-43.4	-90.6	20	76239B
[2]	3030A	30-30 Win.	150	9.72	Hi-Shok Soft Point FN	210	2390	2020	1680	1400	1180	1040	1900	1355	945	650	460	355	2.0	8.5	20.9	40.1	66.1	+0.2	⊕	-7.2	-26.7	+1.9	+3.6	⊕	-15.9	-49.1	-104.5	24	3030A
[2]	3030B		170	11.01	Hi-Shok Soft Point RN	210	2200	1900	1620	1380	1190	1060	1830	1355	990	720	535	425	1.9	8.0	19.4	36.7	59.8	+0.3	⊕	-8.3	-29.8	+2.4	+4.1	⊕	-17.4	-52.4	-109.4	24	3030B
[1]	3030C		125	8.10	Hi-Shok Hollow Point	210	2570	2090	1660	1320	1080	960	1830	1210	770	480	320	260	2.2	10.1	25.4	49.4	81.6	+0.1	⊕	-6.6	-26.0	+1.7	+3.3	⊕	-16.0	-50.9	-109.5	24	3030C
[2]	300A	300 Savage	150	9.72	Hi-Shok Soft Point	210	2630	2350	2100	1850	1630	1430	2305	1845	1460	1145	885	685	1.1	4.8	11.6	21.9	36.3	0	⊕	-4.8	-17.6	+1.2	+2.4	⊕	-10.4	-30.9	-64.4	24	300A
[2]	300B		180	11.66	Hi-Shok Soft Point	210	2350	2140	1940	1750	1570	1410	2205	1825	1495	1215	985	800	1.1	4.6	10.9	20.3	33.3	+0.1	⊕	-6.1	-21.6	+1.7	+3.1	⊕	-12.4	-36.1	-73.8	24	300B
[2]	308A	308 Win. (7.62x51mm)	150	9.72	Hi-Shok Soft Point	210	2820	2530	2260	2010	1770	1560	2650	2140	1705	1345	1050	810	1.0	4.4	10.4	19.7	32.7	-0.1	⊕	-3.9	-14.7	+0.8	+2.0	⊕	-8.8	-26.3	-54.8	24	308B
[2]	308B		180	11.66	Hi-Shok Soft Point	210	2620	2390	2180	1970	1780	1600	2745	2290	1895	1555	1270	1030	0.9	3.9	9.2	17.2	28.3	-0.1	⊕	-4.6	-16.5	+1.1	+2.3	⊕	-9.7	-28.3	-57.8	24	308B
[2]	3006A	30-06 Springfield	150	9.72	Hi-Shok Soft Point	210	2910	2620	2340	2080	1840	1620	2820	2280	1825	1445	1130	875	1.0	4.2	9.9	18.7	31.2	-0.2	⊕	-3.6	-13.6	+0.7	+1.8	⊕	-8.2	-24.4	-50.9	24	3006A
[3]	3006B	(7.62x63mm)	180	11.66	Hi-Shok Soft Point	210	2700	2470	2250	2040	1850	1660	2915	2435	2025	1665	1360	1105	0.9	3.7	8.8	16.5	27.1	-0.1	⊕	-4.2	-15.3	+1.0	+2.1	⊕	-9.0	-26.4	-54.0	24	3006B
[1]	3006C		125	8.10	Hi-Shok Soft Point	210	3140	2780	2450	2140	1850	1600	2735	2145	1660	1270	955	705	1.1	4.5	10.8	20.5	34.4	-0.3	⊕	-3.0	-11.9	+0.5	+1.5	⊕	-7.3	-22.3	-47.5	24	3006C
[3]	3006H		220	14.25	Hi-Shok Soft Point RN	210	2410	2130	1870	1630	1420	1250	2835	2215	1705	1300	985	760	1.4	6.0	14.3	27.2	45.0	-0.1	⊕	-6.2	-22.4	+1.7	+3.1	⊕	-13.1	-39.3	-82.2	24	3006H
[3]	3006J		180	11.66	Hi-Shok Soft Point RN	210	2700	2350	2020	1730	1470	1250	2915	2200	1630	1190	860	620	1.5	6.4	15.7	30.4	51.2	-0.1	⊕	-4.9	-18.3	+1.1	+2.4	⊕	-11.0	-33.6	-71.9	24	3006J
[3]	300WB	300 Win. Magnum	180	11.66	Hi-Shok Soft Point	215	2960	2750	2540	2340	2160	1980	3500	3010	2580	2195	1860	1565	0.7	2.8	6.6	12.3	20.0	-0.2	⊕	-3.1	-11.7	+0.6	+1.6	⊕	-7.0	-20.3	-41.1	24	300WB
[2]	303A	303 British	180	11.66	Hi-Shok Soft Point	210	2460	2230	2020	1820	1630	1460	2420	1995	1625	1315	1060	850	1.1	4.5	10.6	19.9	32.7	0	⊕	-5.5	-19.6	+1.4	+2.8	⊕	-11.3	-33.2	-68.1	24	303A
[2]	303B		150	9.72	Hi-Shok Soft Point	210	2690	2440	2210	1980	1780	1590	2400	1980	1620	1310	1055	840	1.0	4.1	9.6	18.1	29.9	-0.1	⊕	-4.4	-15.9	+1.0	+2.2	⊕	-9.4	-27.6	-56.8	24	303B
[2]	32A	32 Win. Special	170	11.01	Hi-Shok Soft Point	210	2250	1920	1630	1370	1180	1040	1910	1395	1000	710	520	410	1.9	8.4	20.3	38.6	63.0	+0.3	⊕	-8.0	-29.2	+2.3	+4.0	⊕	-17.2	-52.3	-109.8	24	32A
[2]	*8A	8mm Mauser (8x57mm JS Mauser)	170	11.01	Hi-Shok Soft Point	210	2360	1970	1620	1330	1120	1000	2100	1465	995	670	475	375	2.1	9.3	22.9	43.9	71.7	+0.2	⊕	-7.6	-28.5	+2.1	+3.8	⊕	-17.1	-52.9	-111.9	24	8A
[3]	338C	338 Win. Magnum	225	14.58	Hi-Shok Soft Point	215	2780	2570	2370	2180	2000	1830	3860	3305	2815	2380	2000	1670	0.8	3.1	7.3	13.6	22.2	-0.1	⊕	-3.8	-13.7	+0.8	+1.9	⊕	-8.1	-23.5	-47.5	24	338C
[2]	357G	357 Magnum	180	11.66	Hi-Shok Hollow Point	100	1550	1160	980	860	770	680	960	535	385	295	235	185	5.8	21.7	45.2	76.1	NA	⊕	-3.4	-29.7	-88.2	+1.7	⊕	-22.8	-77.9	-173.8	-321.4	18	357G
[2]	35A	35 Rem.	200	12.96	Hi-Shok Soft Point	210	2080	1700	1380	1140	1000	910	1920	1280	840	575	445	370	2.7	12.0	29.0	53.3	83.3	+0.5	⊕	-10.7	-39.3	+3.2	+5.4	⊕	-23.3	-70.0	-144.0	24	35A
[3]	375A	375 H&H Magnum	270	17.50	Hi-Shok Soft Point	215	2690	2420	2170	1920	1700	1500	4340	3510	2810	2220	1740	1355	1.1	4.5	10.8	20.3	33.7	-0.4	⊕	-5.5	-18.4	+1.0	+2.4	⊕	-10.9	-33.3	-71.2	24	375A
[4]	375B		300	19.44	Hi-Shok Soft Point	215	2530	2270	2020	1790	1580	1400	4265	3425	2720	2135	1665	1295	1.2	5.0	11.9	22.4	37.1	+0.5	⊕	-6.3	-21.2	+1.3	+2.6	⊕	-11.2	-33.3	-69.1	24	375B
[2]	44A	44 Rem. Magnum	240	15.55	Hi-Shok Hollow Point	150	1760	1380	1090	950	860	790	1650	1015	640	485	395	330	4.2	17.8	39.8	68.3	102.5	⊕	-2.2	-21.7	-67.2	+1.1	⊕	-17.4	-60.7	-136.0	-250.2	20	44A
[2]	4570A	45-70 Government	300	19.44	Hi-Shok Hollow Point	210	1880	1650	1430	1240	1110	1010	2355	1815	1355	1015	810	680	1.7	7.6	18.6	35.7	NA	⊕	-1.3	-14.1	-43.7	+0.7	⊕	-11.5	-39.7	-89.1	-163.1	24	4570A

*Only for use in barrels intended for .323 inch diameter bullets. Do not use in 8x57mm J Commission Rifles (M1888) or in sporting or other military arms of .318 inch bore diameter.
**RN = Round Nose FN = Flat Nose FMJ = Full Metal Jacket HP = Hollow Point

These trajectory tables were calculated by computer using the best available data for each load. Trajectories are representative of the nominal behavior of each load at standard conditions (59°F temperature; barometric pressure of 29.53 inches; altitude at sea level). Shooters are cautioned that actual trajectories may differ due to variations in altitude, atmospheric conditions, guns, sights, and ammunition.

GOLD MEDAL® MATCH RIFLE BALLISTICS (Approximate)

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE*	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	600 YDS.	700 YDS.	800 YDS.	900 YDS.	1000 YDS.	ENERGY IN FOOT-POUNDS (TO NEAREST 5 FOOT-POUNDS) MUZZLE	100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	600 YDS.	700 YDS.	800 YDS.	900 YDS.	1000 YDS.	WIND DRIFT IN INCHES 10 MPH CROSSWIND 100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	600 YDS.	700 YDS.	800 YDS.	900 YDS.	1000 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. 100 YDS.	200 YDS.	300 YDS.	400 YDS.	500 YDS.	600 YDS.	700 YDS.	800 YDS.	900 YDS.	1000 YDS.	FEDERAL LOAD NO.
[5]	GM223M	223 Rem. (5.56x45mm)	69	4.47	Boat-tail HP Match	205M	3000	2720	2460	2210	1980	1760	1560	1390	1240	1130	1060	1380	1135	925	750	600	475	375	295	235	195	170	0.9	3.7	8.7	16.3	27.0	41.3	59.5	82.2	109.2	140.0	+1.6	⊕	-7.4	-21.9	-45.3	-79.8	-128.7	-194.1	-280.2	-388.7	GM223M
[5]	GM308M	308 Win. (7.62x51mm)	168	10.88	Boat-tail HP Match	210M	2600	2420	2240	2070	1910	1760	1610	1480	1360	1260	1170	2520	2180	1870	1600	1355	1150	970	815	690	590	510	0.8	3.1	7.4	13.6	22.2	33.3	47.1	64.1	84.2	107.5	+17.5	+30.5	+36.6	+34.5	+22.9	⊕	-36.1	-87.8	-157.5	-247.4	GM308M
[5]	GM3006M	30-06 Springfield (7.62x63mm)	168	10.88	Boat-tail HP Match	210M	2700	2510	2330	2150	1990	1830	1680	1540	1410	1300	1210	2720	2350	2025	1730	1470	1245	1050	880	740	630	540	0.7	3.0	7.0	13.0	21.2	31.8	45.1	61.5	81.0	103.6	+16.1	+28.1	+33.8	+31.9	+21.1	⊕	-33.4	-81.3	-146.0	-230.1	GM3006M

*HP = Hollow Point

CENTERFIRE PISTOL BALLISTICS

Expansion stages in ballistic gelatin.

HYDRA-SHOK® PISTOL AND REVOLVER BALLISTICS (Approximate)

Usage Key: 1 = Varmints, predators, small game 2 = Medium game 3 = Self defense 4 = Target shooting, training, practice

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE*	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	MID-RANGE TRAJECTORY 25 YDS.	50 YDS.	75 YDS.	100 YDS.	TEST BARREL LENGTH INCHES
3	P380HS1	380 Auto (9x17mm Short)	90	5.83	Hydra-Shok HP	100	1000	940	890	840	800	200	175	160	140	130	0.3	1.2	2.9	5.5	3 3/4
3	P9HS1	9mm Luger (9x19mm Parabellum)	124	8.03	Hydra-Shok HP	100	1120	1070	1030	990	960	345	315	290	270	255	0.2	0.9	2.2	4.1	4
3	P9HS2	9mm Luger (9x19mm Parabellum)	147	9.52	Hydra-Shok HP	100	1000	960	920	890	860	325	300	275	260	240	0.3	1.2	2.8	5.1	4
3	P40HS1	40 S&W	180	11.06	Hydra-Shok HP	100	985	955	930	910	890	390	365	345	330	315	0.3	1.2	2.8	5.0	4
3	P40HS2	40 S&W	155	10.04	Hydra-Shok HP	100	1140	1080	1030	990	950	445	400	365	335	315	0.2	0.9	2.2	4.1	4
3 **NEW**	P40HS3	40 S&W	165	10.66	Hydra-Shok HP	100	975	850	927	906	887	348	331	315	301	288	0.3	1.2	2.7	5.1	4
3	P10HS1	10mm Auto	180	11.06	Hydra-Shok HP	150	1030	995	970	945	920	425	400	375	355	340	0.3	1.1	2.5	4.7	5
3	P45HS1	45 Auto	230	14.90	Hydra-Shok HP	150	850	830	810	790	770	370	350	335	320	305	0.4	1.6	3.6	6.6	5
3	P38HS1	38 Special (High Velocity +P)	129	8.36	Hydra-Shok HP	100	945	930	910	890	870	255	245	235	225	215	0.3	1.3	2.9	5.3	4-V
3	P357HS1	357 Magnum	158	10.23	Hydra-Shok HP	100	1235	1160	1104	1060	1020	535	475	428	395	365	0.2	0.8	1.9	3.5	4-V
3	P44HS1	44 Rem. Magnum	240	15.55	Hydra-Shok HP	150	1180	1130	1081	1050	1010	741	675	623	580	550	0.2	0.9	2.0	3.7	6 1/2-V

+P ammunition is loaded to a higher pressure. Use only in firearms so recommended by the gun manufacturer. "V" indicates vented barrel to simulate service conditions.

*HP = Hollow Point SWC = Semi-Wadcutter

Nyclad Round Nose

Nyclad Semi-Wadcutter Hollow Point

Nyclad Hollow Point

NYCLAD® PISTOL AND REVOLVER BALLISTICS (Approximate)

Usage Key: 1 = Varmints, predators, small game 2 = Medium game 3 = Self defense 4 = Target shooting, training, practice

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE*	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	MID-RANGE TRAJECTORY 25 YDS.	50 YDS.	75 YDS.	100 YDS.	TEST BARREL LENGTH INCHES
3	P9BP	9mm Luger (9x19mm Parabellum)	124	8.03	Nyclad Hollow Point	100	1120	1070	1030	990	960	345	315	290	270	255	0.2	0.9	2.2	4.1	4
4	P38B	38 Special	158	10.23	Nyclad Round Nose	100	755	740	723	710	690	200	190	183	175	170	0.5	2.0	4.6	8.3	4-V
1, 3	P38G	38 Special (High Velocity +P)	158	10.23	Nyclad SWC-HP	100	890	870	855	840	820	270	265	257	245	235	0.3	1.4	3.3	5.9	4-V
3	P38M	38 Special	125	8.10	Nyclad Hollow Point	100	825	780	730	690	650	190	170	150	130	115	0.4	1.8	4.3	8.1	2-V
1, 3	P38N	38 Special (High Velocity +P)	125	8.10	Nyclad Hollow Point	100	945	920	898	880	860	248	235	224	215	205	0.3	1.3	2.9	5.4	4-V
2, 3	P357E	357 Magnum	158	10.23	Nyclad SWC-HP	100	1235	1160	1104	1060	1020	535	475	428	395	365	0.2	0.8	1.9	3.5	4-V

*HP = Hollow Point

Full Metal Jacket Semi-Wadcutter Match

Lead Wadcutter Match

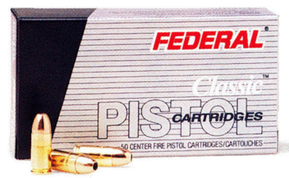
Metal Case Profile Match

GOLD MEDAL® MATCH PISTOL AND REVOLVER BALLISTICS (Approximate)

Usage Key: 1 = Varmints, predators, small game 2 = Medium game 3 = Self defense 4 = Target shooting, training, practice

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE*	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	MID-RANGE TRAJECTORY 25 YDS.	50 YDS.	75 YDS.	100 YDS.	TEST BARREL LENGTH INCHES
4	GM9MP	9mm Luger (9x19mm Parabellum)	124	8.03	FMJ-SWC Match	100	1120	1070	1030	990	960	345	315	290	270	255	0.2	0.9	2.2	4.1	4
4	GM38A	38 Special	148	9.59	Lead Wadcutter Match	100	710	670	634	600	560	166	150	132	115	105	0.6	2.4	5.7	10.8	4-V
4	GM44D	44 Rem. Magnum	250	16.20	MC Profile Match	150	1180	1140	1100	1070	1040	775	715	670	630	600	0.2	0.8	1.9	3.6	6 1/2-V
4	GM45B	45 Auto	185	11.99	FMJ-SWC Match	150	775	730	695	660	620	247	220	200	175	160	0.5	2.0	4.8	9.0	5

*MC Profile Match = Metal Case Profile Match FMJ = Full Metal Jacket SWC = Semi-Wadcutter



Lead Round Nose

Full Metal Jacket

Jacketed Hollow Point

Jacketed Soft Point

Lead Semi-Wadcutter

Full Metal Jacket Semi-Wadcutter

Lead Wadcutter

Semi-Wadcutter Hollow Point

CLASSIC® AUTOMATIC PISTOL BALLISTICS (Approximate)

Usage Key: 1 = Varmints, predators, small game 2 = Medium game 3 = Self defense 4 = Target shooting, training, practice

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE**	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	MID-RANGE TRAJECTORY 25 YDS.	50 YDS.	75 YDS.	100 YDS.	TEST BARREL LENGTH INCHES
3, 4	25AP	25 Auto (6.35mm Browning)	50	3.24	Full Metal Jacket	100	760	750	730	720	700	65	60	59	55	55	0.5	1.9	4.5	8.1	2
3, 4	32AP	32 Auto (7.65mm Browning)	71	4.60	Full Metal Jacket	100	905	880	855	830	810	129	20	115	110	105	0.3	1.4	3.2	5.9	4
3, 4	380AP	380 Auto (9x17mm Short)	95	6.15	Full Metal Jacket	100	955	910	865	830	790	190	175	160	145	130	0.3	1.3	3.1	5.8	3 3/4
3	380BP	380 Auto (9x17mm Short)	90	5.83	Hi-Shok JHP	100	1000	940	890	840	800	200	175	160	140	130	0.3	1.2	2.9	5.5	3 3/4
3, 4	9AP	9mm Luger (9x19mm Parabellum)	124	8.03	Full Metal Jacket	100	1120	1070	1030	990	960	345	315	290	270	255	0.2	0.9	2.2	4.1	4
3	9BP	9mm Luger (9x19mm Parabellum)	115	7.45	Hi-Shok JHP	100	1160	1100	1060	1020	990	345	310	285	270	250	0.2	0.9	2.1	3.8	4
3	9MS	9mm Luger (9x19mm Parabellum)	147	9.52	Hi-Shok JHP	100	975	950	930	900	880	310	295	285	265	255	0.3	1.2	2.8	5.1	4
3	40SWA	40 S&W	180	11.06	Hi-Shok JHP	100	985	955	930	905	885	390	365	345	330	315	0.3	1.2	2.8	5.0	4
3	40SWB	40 S&W	155	10.04	Hi-Shok JHP	100	1140	1080	1030	990	950	445	400	365	335	315	0.2	0.9	2.2	4.1	4
3	10C	10mm Auto	180	11.06	Hi-Shok JHP	150	1030	995	970	945	920	425	400	375	355	340	0.3	1.1	2.5	4.7	5
3	10E	10mm Auto	155	10.04	Hi-Shok JHP	150	1325	1225	1140	1075	1025	605	515	450	400	360	0.2	0.7	1.8	3.3	5
3	45A	45 Auto	230	14.90	Full Metal Jacket	150	850	830	810	790	770	370	350	335	320	305	0.4	1.6	3.6	6.6	5
4	45C	45 Auto	185	11.99	Hi-Shok JHP	150	950	920	900	880	860	370	350	335	315	300	0.3	1.3	2.9	5.3	5
3	45D	45 Auto	230	14.90	Hi-Shok JHP	150	850	830	810	790	770	370	350	335	320	300	0.4	1.6	3.7	6.7	5

CLASSIC® REVOLVER BALLISTICS (Approximate)

Usage Key: 1 = Varmints, predators, small game 2 = Medium game 3 = Self defense 4 = Target shooting, training, practice

USAGE	FEDERAL LOAD NO.	CALIBER	BULLET WGT. IN GRAINS	BULLET WGT. IN GRAMS	BULLET STYLE**	FACTORY PRIMER NO.	VELOCITY IN FEET PER SECOND MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	MID-RANGE TRAJECTORY 25 YDS.	50 YDS.	75 YDS.	100 YDS.	TEST BARREL LENGTH INCHES
4	32LA	32 S&W Long	98	6.35	Lead Wadcutter	100	780	700	630	560	500	130	105	85	70	55	0.5	2.2	5.6	11.1	4
4	32LB	32 S&W Long	98	6.35	Lead Round Nose	100	705	690	670	650	640	115	105	98	95	90	0.6	2.3	5.3	9.6	4
3	32HRA	32 H&R Magnum	95	6.15	Lead Semi-Wadcutter	100	1030	1000	940	930	900	225	210	190	185	170	0.3	1.1	2.5	4.7	4 1/2
3	32HRB	32 H&R Magnum	85	5.50	Hi-Shok JHP	100	1100	1050	1020	970	930	230	210	195	175	165	0.2	1.0	2.3	4.3	4 1/2
4	38B	38 Special	158	10.23	Lead Round Nose	100	755	740	723	710	690	200	190	183	175	170	0.5	2.0	4.6	8.3	4-V
3, 4	38C	38 Special	158	10.23	Lead Semi-Wadcutter	100	755	740	723	710	690	200	190	183	175	170	0.5	2.0	4.6	8.3	4-V
1, 3	38E	38 Special (High-Velocity+P)	125	8.10	Hi-Shok JHP	100	945	920	898	880	860	248	235	224	215	205	0.3	1.3	2.9	5.4	4-V
1, 3	38F	38 Special (High-Velocity+P)	110	7.13	Hi-Shok JHP	100	995	960	926	900	870	242	225	210	195	185	0.3	1.2	2.7	5.0	4-V
1, 3	38G	38 Special (High-Velocity+P)	158	10.23	Semi-Wadcutter HP	100	890	870	855	840	820	278	265	257	245	235	0.3	1.4	3.3	5.9	4-V
3, 4	38H	38 Special (High-Velocity+P)	158	10.23	Lead Semi-Wadcutter	100	890	870	855	840	820	270	265	257	245	235	0.3	1.4	3.3	5.9	4-V
1, 3	38J	38 Special (High-Velocity+P)	125	8.10	Hi-Shok JSP	100	945	920	898	880	860	248	235	224	215	205	0.3	1.3	2.9	5.4	4-V
2, 3	357A	357 Magnum	158	10.23	Hi-Shok JSP	100	1235	1160	1104	1060	1020	535	475	428	395	365	0.2	0.8	1.9	3.5	4-V
1, 3	357B	357 Magnum	125	8.10	Hi-Shok JHP	100	1450	1350	1240	1160	1100	583	495	427	370	335	0.1	0.6	1.5	2.8	4-V
4	357C	357 Magnum	158	10.23	Lead Semi-Wadcutter	100	1235	1160	1104	1060	1020	535	475	428	395	365	0.2	0.8	1.9	3.5	4-V
1, 3	357D	357 Magnum	110	7.13	Hi-Shok JHP	100	1295	1180	1094	1040	990	410	340	292	260	235	0.2	0.8	1.9	3.5	4-V
2, 3	357E	357 Magnum	158	10.23	Hi-Shok JHP	100	1235	1160	1104	1060	1020	535	475	428	395	365	0.2	0.8	1.9	3.5	4-V
2	357G	357 Magnum	180	11.66	Hi-Shok JHP	100	1090	1030	980	930	890	475	425	385	350	320	0.2	1.0	2.4	4.5	4-V
2, 3	357H	357 Magnum	140	9.07	Hi-Shok JHP	100	1360	1270	1200	1130	1080	575	500	445	395	360	0.2	0.7	1.6	3.0	4-V
1, 3	41A	41 Rem. Magnum	210	13.60	Hi-Shok JHP	150	1300	1210	1130	1070	1030	790	680	595	540	495	0.2	0.7	1.8	3.3	4-V
1, 3	44SA	44 S&W Special	200	12.96	Semi-Wadcutter HP	150	900	860	830	800	770	360	330	305	285	260	0.3	1.4	3.4	6.3	6 1/2-V
2, 3	44A	44 Rem. Magnum	240	15.55	Hi-Shok JHP	150	1180	1130	1081	1050	1010	741	675	623	580	550	0.2	0.9	2.0	3.7	6 1/2-V
1, 2	44B*	44 Rem. Magnum	180	11.66	Hi-Shok JHP	150	1610	1480	1365	1270	1180	1035	875	750	640	555	0.1	0.5	1.2	2.3	6 1/2-V
1, 3	45LCA	45 Colt	225	14.58	Semi-Wadcutter HP	150	900	880	860	840	820	405	385	369	355	340	0.3	1.4	3.2	5.8	5 1/2

+P ammunition is loaded to a higher pressure. Use only in firearms so recommended by the gun manufacturer. "V" indicates vented barrel to simulate service conditions.

*Also available in 20-round box (A44B20).

**JHP = Jacketed Hollow Point HP = Hollow Point JSP = Jacketed Soft Point

LEAD SHOT SHELLS

PREMIUM® MAGNUM

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
P109	10	3 1/2	89	4 1/2	1210	2 1/4	63.78	BB, 4,6
P159*	12	3	76	4	1175	2	56.70	BB,2,4,6
P158	12	3	76	4	1210	1 7/8	53.15	BB,2,4,6
P156	12	2 3/4	70	4	1315	1 1/2	42.52	BB,2,4,6
P165	16	2 3/4	70	3 1/4	1260	1 1/4	35.44	4,6
P258	20	3	76	3	1185	1 1/4	35.44	4,6
P256	20	2 3/4	70	2 3/4	1175	1 1/8	31.89	4,6

*Heavyweight

PREMIUM® HI-BRASS®

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
P154	12	2 3/4	70	3 3/4	1330	1 1/4	35.44	4,6,7 1/2
P254	20	2 3/4	70	2 3/4	1220	1	28.35	6
P283	28	2 3/4	70	2 1/4	1295	3/4	21.25	6,7 1/2,8

PREMIUM® MAGNUM TURKEY LOADS (10-round boxes)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
ST109	10	3 1/2	89	4 1/2	1210	2 1/4	63.78	4, 6
ST135	12	3 1/2	89	Max.	1150	2 1/4	63.78	4, 6
ST159*	12	3	76	4	1175	2	56.70	4,5,6,7 1/2
ST155	12	2 3/4	70	4	1250	1 5/8	46.06	4, 6
ST258	20	3	76	3	1185	1 1/4	35.44	6

*Heavyweight

PREMIUM® FIELD LOADS

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
P153	12	2 3/4	70	3 1/4	1220	1 1/4	35.44	7 1/2,8
P252	20	2 3/4	70	2 1/2	1165	1	28.35	7 1/2

CLASSIC® LEAD MAGNUM

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
F131	12	3	76	4	1210	1 7/8	53.15	BB,2,4
F129	12	3	76	4	1280	1 5/8	46.06	2,4, 6
F130	12	2 3/4	70	3 3/4	1260	1 1/2	42.52	BB,2,4,5,6
F207	20	3	76	3	1185	1 1/4	35.44	2,4, 6,7 1/2
F205	20	2 3/4	70	2 3/4	1175	1 1/8	31.89	4, 6,7 1/2

CLASSIC® LEAD FIELD LOAD

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
H125	12	2 3/4	70	3 1/4	1220	1 1/4	35.44	6,7 1/2,8,9
H123	12	2 3/4	70	3 1/4	1255	1 1/8	31.89	4,6,7 1/2,8
H162	16	2 3/4	70	2 3/4	1185	1 1/8	31.89	6,7 1/2,8
H202	20	2 3/4	70	2 1/2	1165	1	28.35	6,7 1/2,8

CLASSIC® LEAD HI-BRASS®

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
H126	12	2 3/4	70	3 3/4	1330	1 1/4	35.44	2,4,5,6,7 1/2,8,9
H163	16	2 3/4	70	3 1/4	1295	1 1/8	31.89	4, 6,7 1/2
H204	20	2 3/4	70	2 3/4	1220	1	28.35	4,5,6,7 1/2,8
H413	410	3	76	Max.	1135	11/16	19.49	4,5,6,7 1/2,8
H412	410	2 1/2	63.5	Max.	1200	1/2	14.17	6,7 1/2

BUCKSHOT SIZES

	No. 000	No. 00	No. 0	No. 1	No. 2	No. 3	No. 4
PELLET DIAMETER							
(IN.)	.36	.33	.32	.30	.27	.25	.24
(MM)	9.14	8.38	8.13	7.62	6.86	6.35	6.10

LEAD SHOT SIZES

	BB	2	4	5	6	7½	8	8½	9	12
PELLET DIAMETER										
(IN.)	.180	.150	.130	.120	.110	.095	.090	.085	.080	.050
(MM)	4.57	3.81	3.30	3.05	2.79	2.41	2.29	2.16	2.03	1.27

STEEL SHOT SHELLS

STEEL MAGNUM

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
W104	10	3 1/2	89	Max.	1350	1 5/8	44.06	F,T,BBB,BB,1,2
W135	12	3 1/2	89	Max.	1300	1 9/16	44.30	F,T,BBB,BB,1,2
W149	12	3	76	Max.	1265	1 3/8	38.98	F,T,BBB,BB,1,2,3,4
W140	12	3	76	Max.	1375	1 1/4	35.44	T,BBB,BB,1,2, 4
W148	12	2 3/4	70	3 1/2	1275	1 1/4	35.44	T,BBB,BB,1,2,3,4
W168	16	2 3/4	70	Max.	1300	15/16	26.58	2, 4
W209	20	3	76	3 1/4	1330	1	28.35	2,3,4

In F, T and some BBB loads, shot charge is determined by pellet count rather than weight. The approximate pellet counts are: W104 (F-65, T-83); W135 (F-59, T-82); W149 (F-50, T-62, BBB-74); W148 (T-55, BBB-69).

STEEL HI-BRASS®

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
W147	12	2 3/4	70	3 3/4	1365	1 1/8	31.89	2,3,4,6
W146	12	2 3/4	70	Max.	1375	1	28.35	2, 4
W208	20	2 3/4	70	Max.	1425	3/4	21.25	4,6

STEEL SHOT SIZES

	6	4	3	2	1	BB	BBB	T	F
PELLET DIAMETER									
(IN.)	.11	.13	.14	.15	.16	.18	.19	.20	.22
(MM)	2.79	3.30	3.56	3.81	4.06	4.57	4.83	5.08	5.59

AVERAGE PELLET COUNT–STEEL SHOT

Weight of Shot in Ounces (Grams)

SHOT SIZE	AVERAGE PELLET COUNT–STEEL SHOT WEIGHT OF SHOT IN OUNCES (GRAMS) 3/4 (21.25)	15/16 (26.58)	1 (28.35)	1-1/8 (31.89)	1-1/4 (35.44)	1-3/8 (38.98)	1-1/2 (42.52)	1-9/16 (44.30)	1-5/8 (46.06)
6	236	295	315	354	394	433	472	492	512
5	182	228	243	273	304	334	364	380	395
4	144	180	192	216	240	264	288	300	312
3	118	143	158	178	197	217	237	247	257
2	94	117	125	141	156	172	187	195	203
1	77	97	103	116	129	142	154	161	167
BB	54	67	72	81	90	99	108	112	117
BBB	46	58	62	70	77	85	93	97	101
T	39	49	52	58	65	71	78	81	84
F	30	37	40	45	50	55	60	62	65

STEEL SHOT GAME SELECTION GUIDE

BIRDS/RANGE	RECOMMENDED STEEL SHOT SIZES	RECOMMENDED MINIMUM SHOT WGT.
Ducks under 35 yds.	2,3,4,6	3/4 oz. +
Ducks 35-45 yds.	BB,1,2,3	1 oz. +
Ducks 45 yds. or more	BB,1,2	1 1/8 oz. +
Small Geese under 45 yds.	BBB,BB,1	1 1/4 oz. +
Large Geese, any range/ Small Geese over 45 yds.	F,T,BBB,BB	1 1/4 oz. +

LEAD VS. STEEL PELLET ENERGY COMPARISON

SHOT TYPE/SIZE	MUZZLE VELOCITY (F.P.S.)	PELLET ENERGY IN FOOT-POUNDS AT RANGE (YARDS) 30	40	50	60
Lead 7½	1330	1.6			
Steel 6	1365	1.8			
Lead 6	1330	3.0	2.3		
Steel 4	1365	3.5	2.5		
Steel 3	1365	4.0	3.0		
Lead 4	1330	5.6	4.4	3.4	
Steel 2	1365	6.0	4.4	3.4	
Lead 2	1330	9.5	7.5	6.1	4.9
Steel 1	1365	7.3	6.1	5.1	4.3
Steel BB	1365	11.6	9.0	7.1	5.5
Lead BB	1330		15.0	12.0	10.0
Steel BBB	1365		13.3	9.6	8.0
Steel T	1365		13.0	10.0	8.5
Steel F	1365		17.0	15.0	13.0

The minimum energy required depends on the type of waterfowl being hunted.

BUCKSHOT AND SLUGS

PREMIUM® BUCKSHOT

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT SIZES
P108	10	3 1/2	89	Magnum	1100	18 Pellets- 00 Buck
P135	12	3 1/2	89	Magnum	1100	18 Pellets- 00 Buck
P158	12	3	76	Magnum	1225	10 Pellets-000 Buck
P158	12	3	76	Magnum	1210	15 Pellets- 00 Buck
P158	12	3	76	Magnum	1040	24 Pellets- 1 Buck
P158	12	3	76	Magnum	1210	41 Pellets- 4 Buck
P156	12	2 3/4	70	Magnum	1290	12 Pellets- 00 Buck
P156	12	2 3/4	70	Magnum	1250	34 Pellets- 4 Buck
P154	12	2 3/4	70	Max.	1325	9 Pellets- 00 Buck

PREMIUM® SABOT SLUGS

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	SLUG TYPE*	SLUG WEIGHT IN OUNCES	SLUG WEIGHT IN GRAINS	DRAM EQUIV.	VELOCITY IN FEET PER SECOND MUZZLE	50 YDS.	75 YDS.	100 YDS.	125 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	HEIGHT OF SLUG TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕YARDS. SIGHTS .5 INCHES ABOVE BORE LINE. 50 YDS.	75 YDS.	100 YDS.	125 YDS.	TEST BARREL LENGTH INCHES
P151SS	12	3	76	Hydra-Shok HP	1	450	Mag.	1550	1410	1290	1190	1100	2400	1990	1665	1405	1220	+1.9	+1.7	⊕	-3.9	30
P154SS	12	2¾	70	Hydra-Shok HP	1	450	Max.	1450	1320	1220	1130	1060	2100	1750	1475	1270	1120	+2.2	+2.0	⊕	-3.9	30

*HP = Hollow Point

CLASSIC® BUCKSHOT

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT SIZES
F131	12	3	76	Magnum	1225	10 Pellets- 000 Buck
F131	12	3	76	Magnum	1210	15 Pellets- 00 Buck
F131	12	3	76	Magnum	1210	41 Pellets- 4 Buck
F130	12	2¾	70	Magnum	1290	12 Pellets- 00 Buck
F130	12	2¾	70	Magnum	1075	20 Pellets- 1 Buck
F130	12	2¾	70	Magnum	1250	34 Pellets- 4 Buck
F127	12	2¾	70	Max.	1325	8 Pellets- 000 Buck
F127	12	2¾	70	Max.	1325	9 Pellets- 00 Buck
F127	12	2¾	70	Max.	1275	12 Pellets- 0 Buck
F127	12	2¾	70	Max.	1250	16 Pellets- 1 Buck
F127	12	2¾	70	Max.	1325	27 Pellets- 4 Buck
F164	16	2¾	70	Max.	1225	12 Pellets- 1 Buck
F207	20	3	76	Magnum	1200	18 Pellets- 2 Buck
F203	20	2¾	70	Max.	1200	20 Pellets- 3 Buck

CLASSIC® SABOT SLUGS

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	SLUG TYPE*	SLUG WEIGHT IN OUNCES	SLUG WEIGHT IN GRAINS	DRAM EQUIV.	VELOCITY IN FEET PER SECOND MUZZLE	50 YDS.	75 YDS.	100 YDS.	125 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	HEIGHT OF SLUG TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS .5 INCHES ABOVE BORE LINE. 50 YDS.	75 YDS.	100 YDS.	125 YDS.	TEST BARREL LENGTH INCHES
F131SS	12	3	76	Sabot Hollow Point	1	450	Mag.	1550	1410	1290	1190	1100	2400	1990	1665	1405	1220	+1.9	+1.7	⊕	-3.9	30
F127SS	12	2¾	70	Sabot Hollow Point	1	450	Max.	1450	1320	1220	1130	1060	2100	1750	1475	1270	1120	+2.2	+2.0	⊕	-3.9	30

CLASSIC® RIFLED SLUGS

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	SLUG TYPE	SLUG WEIGHT IN OUNCES	SLUG WEIGHT IN GRAINS	DRAM EQUIV.	VELOCITY IN FEET PER SECOND MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	HEIGHT OF SLUG TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS .5 INCHES ABOVE BORE LINE. 25 YDS.	50 YDS.	75 YDS.	100 YDS.	TEST BARREL LENGTH INCHES
F103RS	10	3½	89	Hollow Point	1¾	766	Mag.	1280	1160	1080	1020	970	2785	2295	1980	1775	1605	+0.5	⊕	-2.3	-6.7	32
F131RS	12	3	76	Hollow Point	1¼	547	Mag.	1600	1450	1320	1210	1130	3110	2555	2120	1785	1540	+0.3	⊕	-1.5	-4.4	30
F130RS	12	2¾	70	Hollow Point	1¼	547	Mag.	1520	1380	1260	1160	1090	2805	2310	1930	1645	1450	+0.3	⊕	-1.7	-4.9	30
F127RS	12	2¾	70	Hollow Point	1	438	Max.	1610	1460	1330	1220	1140	2520	2075	1725	1455	1255	+0.3	⊕	-1.5	-4.3	30
F164RS	16	2¾	70	Hollow Point	⅞	350	Max.	1600	1360	1180	1060	990	1990	1435	1075	875	755	+0.3	⊕	-1.8	-5.4	28
F203RS	20	2¾	70	Hollow Point	¾	328	Max.	1600	1420	1270	1150	1070	1865	1465	1175	965	835	+0.3	⊕	-1.6	-4.8	26
F412RS	410	2½	63.5	Hollow Point	⅛	88	Max.	1830	1560	1340	1160	1060	650	475	345	265	215	+0.2	⊕	-1.4	-4.3	26

TARGET LOADS

FEDERAL GOLD MEDAL® SKEET LOADS

GOLD MEDAL® PLASTIC

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
S115	12	2¾	70	2¾	1145	1⅛	31.89	9
S116	12	2¾	70	3	1200	1⅛	31.89	9

GOLD MEDAL® PAPER

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
S117	12	2¾	70	2¾	1145	1⅛	31.89	9
S118	12	2¾	70	3	1200	1⅛	31.89	9

GOLD MEDAL® EXTRA-LITE® PLASTIC (soft recoil)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
S114	12	2¾	70	Extra-Lite	1⅛	31.89	9

GOLD MEDAL® PLASTIC (small gauge)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
S206	20	2¾	70	2½	1200	⅞	24.80	9
S280	28	2¾	70	2	1230	¾	21.25	9
S412	410	2½	63.5	Max.	1230	½	14.17	9

FEDERAL GOLD MEDAL® SPORTING CLAYS LOADS

GOLD MEDAL® PLASTIC

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
SC116	12	2¾	70	3	1200	1⅛	31.89	7½, 8

GOLD MEDAL® EXTRA-LITE® PLASTIC (soft recoil)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
SC114	12	2¾	70	Extra-Lite	1⅛	31.89	7½, 8

GOLD MEDAL® SPECIAL PLASTIC (high velocity)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
SC170	12	2¾	70	SPEC.	1⅛	31.89	7½, 8

GOLD MEDAL® PLASTIC (small gauge)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
SC206	20	2¾	70	2½	1200	⅞	24.80	8
SC280	28	2¾	70	2	1230	¾	21.25	8½
SC412	410	2½	63.5	Max.	1230	½	14.17	8½

FEDERAL GOLD MEDAL® TRAP LOADS

GOLD MEDAL® PLASTIC

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
T113	12	2¾	70	2¾	1180	1	28.35	8½
T115	12	2¾	70	2¾	1145	1⅛	31.89	7½, 8
T116	12	2¾	70	3	1200	1⅛	31.89	7½, 8

GOLD MEDAL® PAPER

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
T117	12	2¾	70	2¾	1145	1⅛	31.89	7½, 8
T118	12	2¾	70	3	1200	1⅛	31.89	7½, 8

GOLD MEDAL® EXTRA-LITE® PLASTIC (soft recoil)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
T114	12	2¾	70	Extra-Lite	1⅛	31.89	7½, 8, 8½

GOLD MEDAL® EXTRA-LITE® PAPER (soft recoil)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
T172	12	2¾	70	Extra-Lite	1⅛	31.89	7½, 8

GOLD MEDAL® HANDICAP PLASTIC (high velocity)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
T170	12	2¾	70	HDCP	1⅛	31.89	7½, 8

GOLD MEDAL® HANDICAP PAPER (high velocity)

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	SHOT CHARGE WGT. OUNCES	SHOT CHARGE WGT. GRAMS	SHOT SIZES
T171	12	2¾	70	HDCP	1⅛	31.89	7½, 8

FEDERAL GOLD MEDAL® INTERNATIONAL LOADS

GOLD MEDAL® PLASTIC

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. GRAMS	SHOT SIZES
N110	12	2¾	70	3¼	1325	24	7½ (2.4mm) Copper Plated 8½ (2.16mm)

GOLD MEDAL® PAPER

FEDERAL LOAD NO.	GAUGE	SHELL LENGTH INCHES	SHELL LENGTH MM	DRAM EQUIV.	MUZZLE VELOCITY	SHOT CHARGE WGT. GRAMS	SHOT SIZES
N119	12	2¾	70	3¼	1325	24	7½ (2.4mm) Copper Plated 8½ (2.16mm)

RIMFIRE

CLASSIC™ 22 MAGNUM BALLISTICS (Approximate)

	TYPE	FEDERAL LOAD NO.	CARTRIDGE PER BOX	CALIBER	BULLET WGT. IN GRAINS	BULLET STYLE*	VELOCITY IN FEET PER SECOND MUZZLE	50 YDS.	100 YDS.	150 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	50 YDS.	100 YDS.	150 YDS.	WIND DRIFT IN INCHES 10 MPH CROSSWIND 50 YDS.	100 YDS.	150 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. 50 YDS.	100 YDS.	150 YDS.	50 YDS.	100 YDS.	150 YDS.
	Magnum	757	50	22 Win. Magnum	50	Jacketed HP	1650	1450	1280	1150	300	235	180	145	1.1	4.5	10.3	⊕	-3.6	-12.5	+1.3	⊕	-6.5
	Magnum	737	50	22 Win. Magnum	40	Full Metal Jacket	1910	1600	1330	1140	325	225	155	115	1.3	5.7	13.4	⊕	-2.9	-10.7	+1.0	⊕	-5.8

CLASSIC™ 22 CARTRIDGE BALLISTICS (Approximate)

	TYPE	FEDERAL LOAD NO.	CARTRIDGE PER BOX	CALIBER	BULLET WGT. IN GRAINS	BULLET STYLE*	VELOCITY IN FEET PER SECOND MUZZLE	50 YDS.	100 YDS.	150 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	50 YDS.	100 YDS.	150 YDS.	WIND DRIFT IN INCHES 10 MPH CROSSWIND 50 YDS.	100 YDS.	150 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. 50 YDS.	100 YDS.	150 YDS.	50 YDS.	100 YDS.	150 YDS.
High Velocity	Classic	710	50	22 Long Rifle HV	40	Solid, Copper Plated	1255	1100	1015	940	140	110	92	80	1.5	5.5	11.4	⊕	-6.5	-21.0	+2.7	⊕	-10.8
	Classic	810	100	22 Long Rifle HV	40	Solid, Copper Plated	1255	1100	1015	940	140	110	92	80	1.5	5.5	11.4	⊕	-6.5	-21.0	+2.7	⊕	-10.8
	Classic	712	50	22 Long Rifle HV	38	HP Copper Plated	1280	1120	1020	950	138	105	88	75	1.6	5.8	12.1	⊕	-6.3	-20.6	+2.7	⊕	-10.6
Shot	Classic	716	50	22 Long Rifle Shot	25	No. 12 Lead Shot	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

These ballistic specifications were derived from test barrels 24 inches in length. *HP = Hollow Point

GOLD MEDAL® .22 MATCH BALLISTICS (Approximate)

	TYPE	FEDERAL LOAD NO.	CARTRIDGE PER BOX	CALIBER	BULLET WGT. IN GRAINS	BULLET STYLE	VELOCITY IN FEET PER SECOND MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	ENERGY IN FOOT-POUNDS MUZZLE	25 YDS.	50 YDS.	75 YDS.	100 YDS.	WIND DRIFT IN INCHES 10 MPH CROSSWIND 25 YDS.	50 YDS.	75 YDS.	100 YDS.	HEIGHT OF BULLET TRAJECTORY IN INCHES ABOVE OR BELOW LINE OF SIGHT IF ZEROED AT ⊕ YARDS. SIGHTS 1.5 INCHES ABOVE BORE LINE. 25 YDS.	50 YDS.	75 YDS.	100 YDS.
	Ultra-Match™	UM1	50	22 Long Rifle	40	Solid	1140	1085	1035	995	965	115	104	95	88	82	0.3	1.2	2.6	4.5	0.2	⊕	-2.2	-6.6
	Match	900	50	22 Long Rifle	40	Solid	1140	1085	1035	995	965	115	104	95	88	82	0.3	1.2	2.6	4.5	0.2	⊕	-2.2	-6.6
	Target	711	50	22 Long Rifle	40	Solid	1150	1090	1045	1005	970	117	106	97	89	83	0.3	1.2	2.6	4.5	0.2	⊕	-2.2	-6.4

These ballistic specifications were derived from test barrels 24 inches in length.